

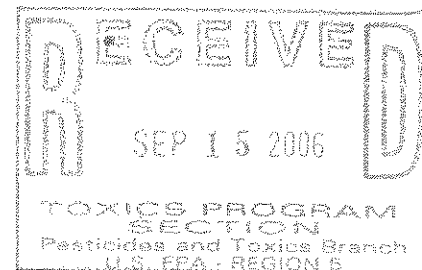


September 14, 2006

Mr. Tony Martig  
Regional PCB Coordinator  
US EPA Region V  
77 W. Jackson Blvd.  
Chicago, IL 60604

Re: PCB Action/Work Plan  
Bodycote Thermal Processing  
1975 N Ruby Street  
Melrose Park, IL 60160  
Project No. 1998002.200

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Dear Mr. Martig:

On behalf of Bodycote Thermal Processing (Bodycote), Mabbett & Associates, Inc. (M&A) has prepared the enclosed *Polychlorinated Biphenyl Action/Work Plan* (PCB Action Plan) for the facility located at 1975 North Ruby Street, Melrose Park, Illinois (the Site). This plan was developed in accordance with 40 CFR 761.61 and addresses PCB groundwater and non-aqueous phase liquid (NAPL) contamination located beneath the Heat Treating Building (HTB) portion of the facility.

Based on information and data submitted previously to the Illinois Environmental Protection Agency (IEPA) two areas of soil and groundwater contamination were identified beneath the HTB. An area of dense non-aqueous phase liquid (DNAPL) and light non-aqueous phase liquid (LNAPL) have been identified and evaluated. Chemical analysis of DNAPL, LNAPL, and groundwater in the immediate vicinity of NAPL occurrence has yielded varying concentrations of PCBs. The presence of PCBs appears to correspond in part to the presence of certain areas of DNAPL and LNAPL. A separate distinct release of PCBs has not been identified. Both areas are located beneath the HTB building footprint and are currently undergoing remediation by the ongoing operation of IEPA approved product recovery efforts.

M&A has researched and interviewed Bodycote personnel as to potential sources of PCB contamination in the subsurface and based on the resultant information we have been unable to identify a specific source of the PCBs. The facility has been in operation since the 1950s and documentation has not been identified regarding the use and storage of PCB containing materials at the facility.

Groundwater and NAPL samples have been collected and analyzed for PCBs intermittently over the past several years from various monitoring wells located throughout the HTB in an effort to identify a source. Based on these data, dissolved PCB contamination has been observed in a limited area both laterally and vertically beneath the HTB. Dissolved PCB concentrations in groundwater appear

Mr. Tony Martig  
September 14, 2006  
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to be declining and in certain instances PCB concentrations in free phase oil have also declined dramatically.

M&A has performed ongoing NAPL removal efforts at the Site for 5+ years which have reduced NAPL occurrence and would appear to be an effective means at additional PCB reductions; since PCBs appear to be present coincidentally with NAPL occurrence. Due to the low permeability and corresponding low groundwater recharge rates observed in HTB monitoring wells, it is M&A's opinion that additional remedial actions would not substantially increase the rate of PCB mass removal from the subsurface in the short term.

Based on available information and ongoing consultation with the IEPA in regards to aerial extent of PCB contamination, M&A proposes the installation of 2-3 additional monitoring wells in the northwest region of the HTB and 1-2 monitoring wells outside the northwestern wall of the HTB during the fall of 2006 to confirm the extent of PCBs. Upon completion of these borings/wells, M&A would conduct another full comprehensive round of groundwater and NAPL sampling utilizing low flow sampling techniques to corroborate our April/May data in fall 2006.

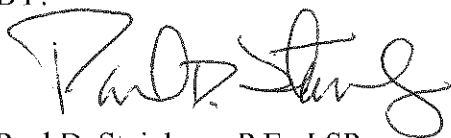
Based on analytical data trends observed to date, M&A proposes that continued NAPL recovery serves as the most feasible course of action for PCB contamination removal. M&A recommends continued NAPL recovery to the maximum extent practicable coupled with long term monitoring and data analysis. All PCB contaminated NAPL and/or groundwater wastes removed from the subsurface will be handled appropriately and disposed of at a permitted facility.

The PCB Action/Work Plan prepared by M&A and dated September 12, 2006 is attached for your review and consideration. If you have any question please feel free to contact me or my colleague William Simons, P.G., LSP.

Very truly yours,

MABBETT & ASSOCIATES, INC.

BY:



Paul D. Steinberg, P.E., LSP  
Vice President  
(781) 275-6050 x 306

cc: Brian Strebing (Bodycote Thermal Processing)  
WFS (MF/RF)



**Mabbett & Associates, Inc.**  
**Environmental Consultants & Engineers**



*Mabbett & Associates*

*is an award-winning firm that  
provides integrated environmental,  
health and safety consulting  
and engineering design services  
to industry, commercial enterprise  
and public agencies.™*

**POLYCHLORINATED BIPHENYL  
ACTION/WORK PLAN**

**BODYCOTE THERMAL PROCESSING  
MELROSE PARK, ILLINOIS**

9/12/06

PROJECT NO. 1998002.200

September 12, 2006



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**Environmental Consultants & Engineers**

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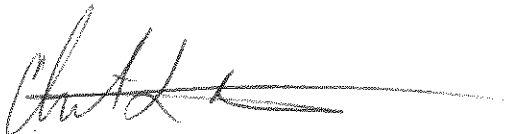
## ACKNOWLEDGMENT

This *Polychlorinated Biphenyl Action/Work Plan* (PCB Action Plan) for 1975 North Ruby Street, Melrose Park, Illinois has been prepared for the sole and exclusive use of Bodycote Thermal Processing (Client). This report is subject to and issued in connection with Letter-Agreement dated February 10, 2006. Any use or reliance upon information provided in this report, without the specific written authorization of the Client and Mabbett & Associates, Inc. (M&A), shall be at the User's sole risk. No attempt has been made to assess the compliance status of any past or present Owner or Operator of the Property with any Federal, state, or local laws or regulations.

The findings, observations, and conclusions presented in this report, including the extent of subsurface explorations and other tests, are limited by the scope of services outlined in our Letter-Agreements which reflect schedule and budgetary constraints. The professional opinions and findings presented in this report are based on the facts and information conveyed to or observed by M&A during completion of this project. Furthermore, assessment and field operations have been performed in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made.

The assessment presented in this report is based solely upon the laws and regulations existing as of the date of this report as well as information gathered to date including a limited number of subsurface explorations made on the dates indicated and performed by others. Should further environmental or other relevant information be developed at a later date, the Client should bring such information to the attention of M&A as soon as possible. Based upon an evaluation, M&A may modify this report and its conclusions.

This report was prepared by the following Mabbett & Associates, Inc. personnel:



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Christopher L. Mabbett, MS, EIT  
Environmental Engineer and Hydrogeologist

**ACKNOWLEDGMENT**  
**(Continued)**

This report has been reviewed and approved by:

MABBETT & ASSOCIATES, INC.

BY:



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Paul D. Steinberg, P.E., LSP  
Vice President



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William F. Simons, PG, LSP  
Project Manager and Senior Hydrogeologist

## EXECUTIVE SUMMARY

This *Polychlorinated Biphenyl Action/Work Plan* (PCB Action Plan) was prepared by Mabbett & Associates, Inc. (M&A) for the Bodycote Thermal Processing (Bodycote) facility at 1975 North Ruby Street, Melrose Park, Illinois (the Site). This report was developed in accordance with 40 CFR 761.61 and addresses PCB groundwater and non-aqueous phase liquid (NAPL) contamination located beneath the Heat Treating Building (HTB).

Based on information presented to the Illinois Environmental Protection Agency (IEPA) in the *Site Investigation Report*, dated September 22, 1998, two areas of soil and groundwater contamination were identified beneath the HTB. An area of dense non-aqueous phase liquid (DNAPL) proximate to intermediate depth well M&A-113 and light non-aqueous phase liquid (LNAPL) proximate to well M&A-114. Both areas were located beneath the HTB building footprint and are currently being contained and remediated by the ongoing operation of various product recovery efforts. A *Remedial Action Plan* (RAP) for the HTB prepared by M&A dated August 16, 2000 was conditionally approved by IEPA in a letter dated December 28, 2000.

Tier 2 soil and groundwater remedial objectives were established by the IEPA in a May 15, 2000 technical review letter in response to the *Remedial Objectives Report for Heat Treating Building* (August 2000).

To implement the conditionally approved RAP with respect to meeting the requirements of achieving soil remedial objectives (SROs), the following actions have occurred:

- Established an engineered barrier utilizing the existing concrete slab flooring present over areas of residual soil impacts and including the construction of a concrete slab along Ruby Street in order to eliminate potential exposure via the industrial/commercial inhalation and ingestion pathways. The engineered barrier was installed to extend to the limits specified in IEPA's conditional approval letters.
- Upon completion of the remedy an Institutional Control will be filed for the area of soil contamination to manage potential future exposure to the restricted areas of residual soil impacts and to provide for ongoing maintenance of the engineered barriers.

Groundwater remedial objectives (GROs) for the HTB were established based in part on pathway exclusion, provided that LNAPL at well M&A-114 and DNAPL at well M&A-113 were removed to the maximum extent practicable and environmental institutional controls restricting groundwater usage are implemented. Institutional controls for groundwater were established and confirmed in submittals to IEPA. LNAPL removal at well M&A-114 was initiated in November 1997 and appears complete. DNAPL removal at well M&A-113 was initiated in November 1997 and is on-going.

Under the IEPA approved RAP in 2000, nine drums of recovered groundwater/DNAPL from M&A-113 were tested, profiled, and disposed of. Of those nine drums, Aroclor 1248 was detected in the organic layer of eight drums at concentrations ranging from 341 mg/kg to 516 mg/kg. These detections of PCBs were above Illinois State and Federal PCB regulations. In order to delineate the extent of contamination, a sampling program was initiated in conjunction with the regularly scheduled sampling required by IEPA.

In October 2005, M&A contacted Ms. Priscilla Fonseca (Region V EPA) in regards to the actions necessary to begin PCB clean up activities and/or continue contaminant delineation activities at the facility. Ms. Fonseca informed M&A that Bodycote must file a "Notice of PCB Activity" (Form #7710-53) and must file a PCB Action/Work Plan. Form #7710-53 was appropriately filed on November 8, 2005.



In July 2006, M&A contacted Ms. Jean Greensley (Region V EPA) to further develop a timeframe for PCB cleanup initiation. Ms. Greensley informed M&A to prepare and submit a PCB Action Plan per 40 CFR 761.61 as soon as possible. In accordance with that request, this PCB Action Plan summarizes PCB actions to date and provides a detailed description of planned remedial actions.

Semi-annual monitoring of selected groundwater monitoring wells has been conducted at the Site since 2000 under the IEPA Voluntary Cleanup Program and will continue until final remediation of the units has been achieved and GROs are met. Semi-annual groundwater monitoring reports summarizing analytical data and operation and maintenance of the recovery systems will continue to be submitted to IEPA. LNAPL and DNAPL recovery efforts are ongoing at the HTB and will be continued until recoverable separate phase liquids have been mitigated to the extent practicable.

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A	Boring Logs/Monitoring Well Installation Diagrams
B	EPA Inspection Documentation
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## **I. DISPOSAL SITE LOCATION**

The Bodycote facility consists of a large industrial complex of approximately twelve interconnected buildings, adjacent paved parking areas and concrete slab on grade foundations of facility buildings. The facility was constructed in the 1950s and has been the site of heat treating operations since that time. The Site is zoned "Industrial" and is planned for use as a manufacturing facility into the foreseeable future. The Bodycote facility is surrounded by high-density commercial/industrial operations for an approximate ½ mile radius from the Property. Drawing L-1 depicts a Site Location Map and surrounding land use. Refer to Drawing L-7 for topographical map of area.

## II. SITE HISTORICAL REMEDIAL ACTIONS

The August 2000 RAP was developed in accordance with 35 Illinois Administrative Code 740.445 and addressed soil and groundwater contamination associated with light non-aqueous phase liquid (LNAPL) and a separate area of dense non-aqueous phase liquid (DNAPL) identified beneath the facility's Heat Treating Building (HTB). Two additional petroleum releases have been delineated at wells MCA-2 and M&A-301 (IEMA Incident No.'s 891730 and 981877, respectively). However, these two releases are associated with former underground storage tanks and are being administered by the IEPA under the leaking underground storage tank (LUST) program. The aerial extent of the LNAPL and DNAPL zones were delineated in a *Focused Site Investigation Report* submitted to IEPA by M&A on September 22, 1998, which was approved by IEPA in an April 27, 1999 correspondence.

Site specific Tier 2 remedial objectives were developed and presented in a *Remedial Objectives Report, Heat Treating Building* submitted by M&A to the IEPA on October 26, 1999. The Soil Remedial Objectives (SROs) for volatile organic compounds (VOCs) were approved by IEPA in a May 15, 2000 technical review letter. In addition, IEPA established the maximum detected concentrations for each contaminant of concern (COC) within HTB groundwater as Tier 2 Groundwater Remedial Objectives (GROs).

The approval of the GROs was contingent on the removal of NAPL to the maximum extent practicable, implementation of groundwater usage controls, and semi-annual groundwater monitoring. Approval of the SROs was contingent on the maintenance of an engineered barrier and implementation of institutional controls restricting activities in the area of soil contamination and restricting groundwater usage on the property.

Major components of the RAP included:

- Ongoing removal of DNAPL from well M&A-113 to the maximum extent practicable.
- Ongoing removal of LNAPL from well M&A-114 to the maximum extent practicable.
- Implementation of an institutional control for pathway exclusion of soil (future).
- Implementation an institutional control for pathway exclusion of groundwater.
- Maintenance of an engineered barrier (concrete floor).
- Semi-annual groundwater monitoring of select groundwater monitoring wells until the source areas are remediated (i.e. free product is removed to the extent practicable) and compliance with GROs is achieved.

### *DNAPL Removal at M&A-113*

Removal of DNAPL from well M&A-113 has been conducted since November 1997 with a stainless steel QED pneumatic Eliminator™ pump equipped with a Teflon bladder. The pump is set at 31 feet below grade at the bottom of well M&A-113, which is screened across the DNAPL impacted sand unit. The system is run on compressed air, which passes through a gross particle filter and oil coalescing filter prior to injection into the bladder pump. Recovered product and groundwater are collected in a 55-gallon drum located adjacent to the wellhead. The system is controlled by a pneumatic/electric controller. This controller includes a pressure regulator, solenoid switch, pressure gauge and electronic timers. The system also includes a pneumatic shut-off high level indicator within the collection drum. When the product storage drum is approximately 2/3 full a

backpressure device automatically shuts off the air supply for the pneumatically driven Eliminator™ pump.

Operation and maintenance of the recovery system involves changing the product recovery drum approximately once every two months. On-site maintenance personnel are responsible for the removal and replacement of filled drums. To date removal efforts at well M&A-113 have yielded approximately 350 gallons of DNAPL and 1,500 gallons of groundwater. The proportionate amount of DNAPL recovered in each 55-gallon drum has been reduced from approximately 20% per drum at system start to 10% currently. This is potentially due to decreasing DNAPL presence. The recovery system operation will be maintained until free product at well M&A-113 has been recovered to the maximum extent practicable.

#### *LNAPL removal at M&A-114*

The removal of LNAPL from M&A-114 was originally conducted via the use of an ABANAKI PetroXtractor™ Well Oil Skimmer, which was in use from November 1997 to September 2000. Prior to installation of the recovery system, the LNAPL layer had been monitored, and amounts approaching two feet had been observed in the well. Periodic hand bailing of product from the well reduced the average LNAPL thickness to two inches or less. Based on this information, it was determined that an automated product removal system would remediate the LNAPL release more effectively than periodic handbailing. During the first week of operation the belt skimmer was run for approximately 3 hours per day. However, field reports indicated that after one week of operation, no recharge of LNAPL was noted. The frequency of belt skimmer operation was reduced to 1-2 hours several times per week.

Field reports indicated little or no product was being collected on the belt skimmer; therefore the skimmer was removed in September 2000. An oil absorbent sock was placed in the well to monitor for the presence and also to collect any residual oil in the well.

Since this time, LNAPL presence has been monitored and recovered via the use of an oil absorbent sock and when necessary, hand bailed. These practices will continue until recoverable product has been mitigated to the extent practicable.

#### *Well MCA-2*

Well MCA-2 was drilled in 1990 and free product was immediately observed in the well. The condition was assigned Incident Number 891730 and free phase product recovery has been conducted under the management of the Leaking Underground Storage Tank (LUST) Section of the IEPA.

LNAPL removal and reporting activities have been conducted at well MCA-2 from December 1993 to the present. Recovery of LNAPL from December 1993 to February 1995 was completed by periodically hand bailing the well. A PetroPore™ oil recovery system was installed at the well in July 1995. M&A removed the PetroPore™ recovery system in September 2000 due to the lack of free product observed in the system. An oil absorbent sock was placed in the well to monitor and recover any recurring free product. Currently less than ½ inch of oil is observed in the well. Oil absorbent socks will continue to be placed in MCA-2 until LNAPL is removed to the maximum extent practicable.

*Well M&A-301*

Well M&A-301 was drilled in September 1996 as part of a program to characterize subsurface conditions in the area of three USTs that were later closed in-place. During routine water level gauging of the well in July 1998 approximately 26 inches of LNAPL were observed in the well. M&A made a verbal release report to the Illinois Emergency Management and LUST Incident No. 981877 was assigned. Remedial activities have been conducted since that time including periodic bailing of LNAPL from the well. M&A has submitted a *20-Day Certification Report* dated August 17, 1998, *A 45 Day Report and Initial Free Product Removal Report* dated November 6, 1998, *A Site Classification Completion Report* dated October 22, 1999, and subsequent Quarterly Free Product Removal reports including the most recent report dated May 19, 2006.

No free product has been observed in the well during the past year. Bodycote personnel continue to monitor and recover, if necessary, product present in the well using a PVC bailer dedicated to the well. The well is monitored periodically (approximately bi-weekly) to assess the presence of LNAPL, and if present to remove the LNAPL. Currently an absorbent sock is placed in the well to monitor and recover product. Based on the lack of LNAPL it is projected that closure will be sought in the coming months for this incident number.

### **III. SITE DESCRIPTION**

#### **A. Introduction**

M&A completed two drilling programs on-Site during the initial investigation. The initial drilling program was completed between August 5, 1997 and August 12, 1997 when M&A personnel observed the drilling of twelve (12) soil borings and the subsequent installation of groundwater monitoring wells within each boring (M&A-111, -112, -113, -114, -115, -116, -117, -118, -119, -120, -121 and -122). Simultaneous to the completion of the initial drilling program, numerous protective well casings at existing wells and soil vapor probe clusters that had been damaged by forklift traffic were also repaired and/or replaced.

The second drilling program was completed between June 22, 1998 and June 26, 1998 when M&A personnel observed the drilling of five (5) additional soil borings and the subsequent installation of groundwater monitoring wells within each boring (M&A-123, -124, -125, -126 and -127). Monitoring well/boring locations are shown on Drawing L-2. Refer to Appendix A, Boring Logs and Monitoring Well Installation Diagrams, for specifics.

#### **B. Geology**

Examination of the subsurface boring log details from locations drilled on-Site indicate the unconsolidated material underlying the Site has a discernible stratigraphy based on the correlation of sediments between bore holes. Two (2) geologic cross-sections were constructed (Drawing L-3); A-A' which traverses the entire site from west to east and D-D' which intersects section A-A' from north to south in the vicinity of the center of mass of the TCE release. Borings which were not directly on the transect line but were close enough to provide useful information were projected onto the cross-sections. This results in a slight distortion of the spacial relationship between the borings, but permits a more complete depiction of Site stratigraphy. Due to the distortion discussed above, the lack of a precise depth to water measurement in borings where wells were not installed and wells which contain little or no groundwater, the position of the water table indicated on the cross-sections should be considered an approximation. Therefore, this information should only be used to evaluate the position of contaminants in approximate relation to the water table. Groundwater contours and direction of movement are discussed in Section C of this report and detailed boring logs are contained in Appendix A.

The concrete slab-on-grade construction of the building floors was completed on fill material which varied in thickness from approximately two to seven feet. The shallow fill material (two to three feet) is primarily comprised of sand and gravel and does not appear to be native to the Site. The presence of a black, ashy, slag like material including metal shavings, was noted at numerous locations within the shallow fill. The deeper fill material (three to seven feet) is primarily comprised of silt, with varying percentages of clay, fine sand, and fine gravel and appears to have originated on or near the site. Borings drilled outside of the buildings did not encounter any of the sand and gravel fill material.

The native material underlying the fill between the approximate depths of 5 to 20 feet below grade is primarily silt, with varying percentages of clay, and fine to coarse sand. The moisture

content of the silt varied from damp to wet and exhibited varying degrees of vertical, horizontal or diagonal fracturing. Some of the larger fractures have been filled with fine sand. The color of the silt was found to be four different colors: gray, olive, tan/brown and dark brown. These silt units appear to be primarily lacustrine in origin but may also contain glacial outwash and/or fluvial deposits within them.

Underlying the silt beneath the majority of the site is dry, very dense, gray very fine sand and silt exhibiting slaty horizontal cleavage and/or fracturing. This gray very fine sand appears representative of a beach facies. The gray very fine sand is located between the approximate depths of 20 to 28 feet below grade in the southern and eastern portions of the site.

Underlying the gray very fine sand and silt beneath the southern and eastern portions of the site is dry, very stiff, gray silt and fine sand. The gray silt and fine sand is located between the approximate depths of 28 to 30 feet below grade. The gray silt and fine sand unit beneath the southern and eastern portions of the site exhibits varying degrees of vertical, horizontal or diagonal fracturing to a maximum depth of approximately 30 feet. Below this depth, fracturing was not generally observed, possibly due to increased plasticity of the till, or the weight of overlying materials. The gray silt and fine sand is also observed to be interbedded with the gray very fine sand and silt unit beneath the northwestern portions of the site between the approximate depths of 22 to 31 feet below grade.

Underlying the gray silt and sand beneath the southern and eastern portions of the site is wet, medium dense, gray fine to coarse sand with lesser amounts of silt. The wet gray fine to coarse sand is located between the approximate depths of 31 to 34 feet below grade. This wet gray fine to coarse sand unit appears to represent an intermediate depth water bearing zone.

Underlying the gray silt and fine sand beneath the northwestern portions of the site is dry, very dense, gray very fine sand and silt exhibiting slaty horizontal cleavage and/or fracturing. This gray very fine sand is similar to that located in the eastern and southern portions of the site but is located at a greater depth of approximately 31 to 35 feet below grade. The gray very fine sand and silt is observed to overlie and interbed with silt and fine sand below the approximate depth of 35 feet beneath the northwestern portions of the site.

A hard gray glacial till unit was identified beneath the gray fine to coarse sand under the southern and eastern portions of the site below an approximate depth of 34 feet below grade. The gray till is primarily comprised of silt with varying percentages of clay, sand and gravel. The moisture content of the till varies from damp to wet. The wet zones within the predominately damp till were associated with sand and gravel lenses.

The deeper native material underlying the northwestern portions of the site appears to be primarily comprised dry, very dense, gray very fine sand and silt exhibiting slaty horizontal cleavage interbedded with dry silts and fine sands. The northwestern portions of the site do not appear to contain wet zones associated with sand and gravel lenses observed within the till observed in eastern and southern portions of the site.

Geologic maps contained in Circular 532 published by the Illinois Department of Energy and Natural Resources, State Geological Survey Division, entitled "Potential for Contamination of Shallow Aquifers in Illinois" (Berg et al, 1984) were reviewed. Plate 1, "Potential for



Contamination of Shallow Aquifers from Land Burial of Municipal Wastes" (Berg et al, 1984) describes the surficial geology as a "Uniform, relatively impermeable silty or clayey till at least 50 feet thick; no evidence of interbedded sand and gravel." Since lenses were found at the Bodycote facility and till is typically unstratified and poorly sorted, the description contained in this publication may not be entirely representative of the stratigraphy observed during this investigation. However, the sand and gravel lenses encountered have not been observed to be more than 5 feet thick, as specified by IAC Title 35 Part 620.210 to meet the definition of a potable water supply. Additionally, the results of well yield tests, as described in Section C, completed on groundwater monitoring wells screened across these sand and gravel lenses during previous investigations, indicate that these sand and gravel lenses are not capable of yielding a sufficient volume of groundwater to warrant changing the Berg et. al., 1984, Plate 1 E designation for the intermediate depth geology at the Bodycote site. The geologic limitations section of Plate 1 also indicates the Bodycote site to be in an area of low potential for contaminating shallow aquifers.

The geologic description contained in the "Preliminary Report on Groundwater Resources of the Chicago Region, Illinois" (Suter et. al., 1959) provides a geologic description of a typical glaciolacustrine deposit sequence which appears to explain both the thin sand and gravel lenses noted on the intermediate depth on-site borings logs and also indicates relatively impermeable silty or clayey fine-grained materials. Suter et. al., describes the observed intermediate depth geology as consisting of the following: deposits of well sorted sand and gravel accumulated along beaches by wave action, inclined sand and gravel beds laid down in deltas, and fine sediment that settled in quiet waters off shore. Notwithstanding a published geologic description which specifically matches the observed on-site intermediate depth geology, the shallow on-site geology underlying the site was observed to consist of relatively impermeable silty or clayey till or other fine-grained materials to a depth greater than 20 feet, and is consistent with the Berg et. al., 1984 D2 designation.

### **C. Hydrogeology**

Groundwater elevations were measured relative to top-of-PVC casing elevations which were determined by Advanced Survey & Mapping, Inc. Elevations are referenced to the National Geodetic Vertical Datum (NGVD) of 1929. The depth to groundwater/oil was measured in all on-Site groundwater monitoring wells by M&A personnel in April 2006 during the on-going semi-annual groundwater monitoring events. Refer to Table 3, Groundwater Elevations, for a summary of casing elevations, depth to groundwater and groundwater elevations.

The depths to groundwater utilized to calculate groundwater flow contours presented for the entire Site were measured in April 2006. The groundwater elevations calculated for the monitoring wells, and field observations during drilling, indicated that two (2) groundwater bearing zones appear to be located beneath the Site. The saturated soils comprising the water bearing zones were encountered at the approximate depths of 3 to 7 feet and 31 to 34 feet below grade, respectively.

The shallow water bearing zone, primarily located within fill material between the depths of 3 to 7 feet below grade, was observed to be horizontally discontinuous across the site and the vertical extent or maximum depth generally was not observed to be greater than 10 feet. Beneath the building, this water bearing zone appeared to be associated with the interface between sand and

gravel fill, and underlying silts. Outside the building, the location of the first water bearing zone appeared to be less predictable, with depth being dependent on the natural gradational variation in material types and/or the frequency of diagonal fracturing as noted on the boring logs.

The intermediate depth water bearing zone was observed to be associated with a fine to coarse sand and silt deposit, between the approximate depths of 31 to 34 feet below grade, at intermediate depth borings located in the southern and eastern portions of the Site. The fine to coarse sand and silt deposit associated with the intermediate depth water bearing zone was observed to vary in thickness from approximately 1 to 3 feet and appears to represent a leaky confined water bearing zone. The water table elevation measured in all of the monitoring wells screened in the intermediate depth bearing zone locate the groundwater table above overlying very fine sand and silt deposits. Although the water table at intermediate depth monitoring wells M&A-111, -113, -115, -117, -119, -121, -126, and -127 is within or above a very fine sand and silt, no water was observed to be associated with the fine sand and silt at these locations during the drilling of the numerous borings locating the fine sand and silt. This condition appears due to confining pressures, and there is no water in the very fine sand and silt itself at these locations. The intermediate depth fine to coarse sand and silt deposit was not observed at monitoring well/boring M&A-122. However, well M&A-122 appears to be hydraulically connected with this water bearing zone and the very fine sands and silts at this location produced groundwater after the well stabilized. Wells screened entirely within the deeper fine sands and silts (M&A-123 and M&A-125) had no measurable water within them approximately one (1) month after installation.

The water bearing zones were observed to be isolated from each other by dry to damp silt. Contour maps depicting shallow and intermediate depth groundwater contours were constructed and are presented as Drawings L-4, Shallow Groundwater Contour Plan, and L-5, Intermediate Depth Groundwater Contour Plan, respectively. Water table elevations for on-site monitoring wells located outside of the study area of this investigation were also used to construct the contour maps to provide a more regional representation of groundwater flow. The depth to groundwater ranged between 2.9 and 31.35 feet below grade across the Bodycote site. Groundwater elevations calculated for on-site monitoring wells which had a measurable thickness of separate phase petroleum product were not used in calculating the groundwater flow contours.

Similarly to previous investigations, the groundwater elevations calculated for the shallow groundwater contours in the vicinity of the Heat Treating Building had a generalized groundwater flow direction from east to west. While the intermediate depth groundwater contours beneath the Heat treating Building indicate a generalized flow direction from west to east toward the Gantry Building.

Hydrologic connections between various water bearing strata in the shallow aquifer appear to be discontinuous, and certain wells may contain groundwater intermittently after several months of stabilization. This is evidenced by shallow groundwater monitoring wells in close proximity to each other yielding radically different volumes of groundwater as observed while sampling the wells. For example, monitoring well M&A-124 has not been observed to contain groundwater, well M&A-102 while containing groundwater has insufficient overnight recharge for sampling and wells M&A-5, M&A-101, -105, -106 and -107 while often observed to contain sufficient groundwater for overnight recharge and sampling, wells M&A-106 and M&A-107 have also

been observed to contain no groundwater or have insufficient overnight recharge for groundwater samples to be collected. Shallow groundwater monitoring wells M&A-104, MCA-2 and MW-6 were the only wells which appeared to recharge readily during purging.

#### **D. Groundwater Classification**

Data collected during the completion of the hydrogeologic investigations at Bodycote was used to re-examine the classification of the intermediate depth groundwater bearing zone beneath the Bodycote site utilizing the classification system criteria established by IEPA under TITLE 35 ILL. ADM. CODE 303, Part 620, Subpart B, Groundwater Classification. Groundwater is classified as Class II, or general resource groundwater, if the provisions of the other classifications are not met: Section 620.210 (Class I); Section 620.230 (Class III); or Section 620.240 (Class IV).

Based on this classification system, M&A had previously determined all groundwaters beneath the Bodycote site to be Class II. In a January 4, 1996 correspondence, IEPA concurred that groundwater beneath the Bodycote site had been determined to be Class II to a depth of 25 feet. However, IEPA was of the opinion that additional information was necessary to make a determination that intermediate depth groundwater met the Class II criterion. Specifically, IEPA wanted to ensure the intermediate depth water bearing zone is not capable of yielding the Class I criterion of 150 gallons of water per day.

Under Section 620.210, if the following criteria are met, the groundwater is classified as Class I: the groundwater is located 10 or more feet below the land surface and: within the minimum setback zone of a well which serves as a potable water supply; within unconsolidated sand, gravel or sand and gravel which is 5 feet or more in thickness and that contains 12 percent or less of fines (i.e. fines which pass through a No. 200 sieve); within sandstone which is 10 feet or more in thickness, or fractured carbonate which is 15 feet or more in thickness; within a geologic material capable of a sustained groundwater yield (from up to a 12-inch borehole) of 150 gallons per day or more from a thickness of 15 feet or less; or within a geologic material which has a hydraulic conductivity of  $1 \times 10^{-4}$  cm/sec or greater. In addition, any groundwater which is determined by the IEPA, pursuant to petition procedures set forth in Section 620.260, to be capable of potable use is also considered Class I. The groundwater of the intermediate depth water bearing zone is located below a depth of ten feet, however, none of the additional Class I criteria have been met. A discussion in support of intermediate depth groundwaters being Class II is presented below.

A conversation with Mr. Sonny Stamacakis of the Village of Melrose Park Building Department indicated that there were no public supply wells presently in use, nor had there been for an extensive period of time in the Village of Melrose Park. Additionally, the installation of new private wells is prohibited under the provisions of Ordinance No. 321 signed by the Village of Melrose Park president on November 24, 1997. The Village of Melrose Park receives all of its publicly supplied water from the City of Chicago water system which uses Lake Michigan as the source of potable water. Therefore, no portion of the Bodycote site is within the setback zone of either a private well or public supply well (200 and 400 feet, respectively). Extensive information on private wells in the vicinity of the Bodycote site was previously provided in a report submitted to IEPA entitled "Continuing Site Investigation Report" and dated December 2, 1994.

The intermediate depth water bearing zone was observed to be located within unconsolidated material (no bedrock was encountered at the site) and the maximum observed thickness of the intermediate water bearing zone was observed to be approximately 3 feet, which is less than the 5-foot criterion. It was observed during yield testing conducted on wells M&A-110 and M&A-113 between September 9, 1997 and September 11, 1997 that these intermediate depth wells are not capable of yielding the Class I criterion of 150 gallons of water per day. More recent testing in May 2006 continued to corroborate that the intermediate wells exhibit yield rates less than 150 gallons of water per day.

Laboratory permeability testing on a soil sample collected on-site by Shelby Tube from monitoring well/boring MW-10 was performed during the completion of a report previously submitted to IEPA entitled, "RCRA Container Storage Area Closure, Additional Soil Sampling and Groundwater Classification" and dated July 28, 1992. The permeability testing by triaxial chamber and back pressure saturation measured the hydraulic conductivity at  $6.22 \times 10^{-9}$  cm/sec. The soil sample collected from 36 to 37 feet is representative of the gray silt and clay observed beneath the Bodycote site, and is not associated with a water bearing sand zone.

- Examination of the criteria under Section 620.230 for Class III, Special Resource Groundwater, and Section 620.240 for Class IV, Other Groundwater, were also reviewed and determined not to be applicable to the Bodycote site. Since the site is located in an industrial area far from sensitive or special resource environments, and the groundwater is not demonstrably unique, Class III does not apply. Class IV applies to certain special cases, which do not appear to exist at the Bodycote site. Based on this information, intermediate depth groundwater meets applicable Class II criteria.

#### IV. INITIAL PCB OBSERVATIONS

In May 2000, PCBs were discovered during routine profiling and disposal of nine drums of recovered groundwater/DNAPL from M&A-113. Of those nine drums, Aroclor 1248 was detected in the organic layer of eight drums at concentrations ranging from 341 mg/kg to 516 mg/kg. These detections of PCBs were above Illinois State and Federal PCB regulations and therefore further sampling for PCBs was initiated in September 2000. An in-depth file review was performed of all Bodycote Facility, State Fire Marshall, Village of Melrose Park Fire Department, Village of Melrose Park Building Department and Health Office records. No records were located documenting PCB use, spills, or PCB containing equipment on Site. Bodycote personnel were also interviewed for any knowledge regarding PCB spills or PCB containing equipment, and none were identified.

In response to the detections in May 2000, M&A sampled NAPL occurring in wells M&A-113 and M&A-111 in September 2000. Laboratory results indicated Aroclor 1248 at concentrations of 1,600 mg/kg and 3,308 mg/kg respectively. Upon further corroboration of laboratory results, M&A decided to initiate a PCB groundwater sampling round in 2002. Seven groundwater monitoring wells were included in this sampling event in October 2002. Of those seven wells sampled, PCBs were detected in four wells at concentrations ranging from 1.6 ug/L to 600 ug/L. The IEPA TACO Tier I standard for PCBs in groundwater is 2.5 ug/L.

M&A decided at this juncture to continue sampling both groundwater and NAPL for PCBs in order to obtain additional data necessary for formulating a PCB action/work plan. The summary of laboratory results can be viewed in Tables 1 and 2.

During May 2004 Site visit, M&A sampled NAPL occurring in wells M&A-113, M&A-114, and M&A-301. Laboratory results indicated the presence of Aroclor 1248 at concentrations of 946, 1.72, and 0.67 mg/kg respectively. During this Site visit M&A also sampled groundwater from thirteen monitoring wells in the HTB. Laboratory results indicated an elevated presence of Aroclor 1248 in four of the thirteen sampled; M&A-103, M&A-112, M&A-110, and M&A-113. Concentrations of Aroclor 1248 in groundwater ranged from 4.99 ug/L to 15.8 ug/L. These levels were all above the IEPA TACO Tier I Standard of 2.5 ug/L.

A review of applicable regulations was performed in the summer of 2005 by M&A personnel in order to determine a comprehensive plan of action in relation to the detections of PCBs in groundwater and NAPL. TSCA 40 CFR Part 761.62 discusses the handling of PCB remediation waste and chapter 35 Part 721 of the Illinois Administrative Code discusses identification and listing of hazardous waste. 40 CFR Part 761.61 states that self-implementing procedures (without approval) may not be used to clean up groundwater, amongst other media. Prior to the commencement of any remedial activities written approval of the clean up plan from the EPA is required.

In October 2005, M&A contacted Ms. Priscilla Fonseca (Region V EPA) in regards to the actions necessary to begin clean up activities and/or continue contaminant delineation activities at the facility. Ms. Fonseca informed M&A that Bodycote must file a "Notice of PCB Activity" (Form #7710-53) and must file a PCB Action/Work Plan. Form #7710-53 was appropriately filed on November 8, 2005 and the PCB Action Plan is described herein.

Upon further coordination with IEPA, a Mr. James Clark performed an on-Site audit to aid in evaluating-determining potential sources of PCB contamination. Based on the results of his investigation, Mr. Clark suggested that since no records of PCB use at the facility were located, and no transformers or equipment currently or historically existed on-Site that contained PCBs, the source of contamination may never be determined. Mr. Clark did however recommend the installation of 2-4 additional monitoring wells in the northwest portion of the HTB and to perform a more in-depth sampling round to further delineate the contamination zone. Refer to Appendix B for Inspection Documentation.

As the previous round of sampling for PCBs was performed in 2004, and upon further discussions with Ms. Fonseca, M&A determined in the winter of 2005 that a more comprehensive round of PCB sampling was necessary in order to formulate an appropriate course of action for submittal to the EPA with regards to the cleanup of PCB contamination at the Site. This sampling was performed in April/May 2006.

## V. RECENT SAMPLING

In April 2006, during the semi-annual groundwater monitoring program, a total of eighteen groundwater wells and three monitoring wells containing NAPL were sampled for PCBs. The analytical data obtained during this sampling event was compared against previous data in order to determine aerial extent of PCB contamination. Based on these data, it appears that remedial activities undertaken at the Site for the cleanup of NAPL have had a positive impact on the removal of PCB mass present in the subsurface.

As seen in Table 1 and 2, historic concentrations of PCBs were detected above the TACO Tier 1 remedial standard of 2.5 ug/L in numerous wells at the Site. During the April 2006 sampling event, PCBs were detected above the TACO Tier I standard in only two of the eighteen groundwater locations sampled, M&A-110 and M&A-113. M&A-113 showed a detection of Aroclor 1242 at 16.3 ug/L and M&A-110 showed a detection of Aroclor 1242 at 5.92 ug/L. PCB concentrations in the remaining locations had decreased significantly to below method detection limits.

During the April/May event any monitoring wells containing NAPL were also sampled for PCBs. As seen in Table 2, NAPL was observed in three monitoring wells. M&A-113 contained DNAPL, and M&A-114 and MCA-2 contained LNAPL. During historic sampling events, highly elevated concentrations of Aroclor 1248 were found in M&A-111 and M&A-113. Recently, M&A-111 has no longer exhibited NAPL contamination and therefore NAPL has not been present for collection of subsequent PCB testing. The sample taken from M&A-113 yielded no PCB detections. PCBs were detected in NAPL sampled from M&A-114, at a concentration of 41.4 mg/kg. This value is elevated from the previous sample obtained in 2004, which indicated PCB concentrations of 1.72 mg/kg.

## VI. SAMPLING PROCEDURES

Shallow and intermediate groundwater wells were sampled and analyzed for PCBs according to EPA Method 8082. Free phase NAPL was also sampled for PCBs according to EPA Method 8082. Drawing L-1 presents monitoring well locations.

Historically, samples were collected via hand bailing approximately three (3) well volumes of standing water from each well using a pre-cleaned disposable polyvinyl chloride (PVC) bailer and sampling. Samples were collected, placed in a cooled container, and submitted under chain of custody documentation to TestAmerica Incorporated, Nashville, TN for laboratory analysis.

Due to the low solubility of PCBs in water it was decided to perform low flow sampling during the April/May 2006 sampling event to minimize the amount of sediment, if any, which was entering the samples. Low flow sampling can be considered a more appropriate method for sampling groundwater for PCBs. Prior to sampling, purged groundwater was monitored for pH, conductivity, turbidity, and flow rate. Once groundwater parameters stabilized for three consecutive sets of readings, water samples were collected from Teflon-lined tubing. Samples were collected, placed in a cooled container, and submitted under chain of custody documentation to TestAmerica Incorporated, Nashville, TN for laboratory analysis.



## VII. NATURE AND EXTENT OF THE CONTAMINATION

As previously documented in Sections IV and V of this report, groundwater and NAPL sampling has occurred at various wells located throughout the HTB. Based on this information the highest concentrations of the PCB contamination continues to be present in the NAPL located at well M&A-114 and in groundwater at well M&A-113 and M&A-110 (see Tables 1 and 2). Drawing L-6 depicts the limited area of PCB groundwater and NAPL contamination at the Site.

Based on geological formation explorations performed by M&A to date and upon corroboration of those data with current hydrogeologic data and many years of groundwater quality data, the migration of groundwater contaminants off the property is not considered likely. In-situ groundwater recovery rates were measured in four shallow monitoring wells and one intermediate monitoring well utilizing MiniTroll® pressure transducers. All recovery rates observed were less than 0.75 gallons per day. Thus re-confirming low conductivity rates that were ascertained in the late 1990's.

## VIII. FUTURE EXPLORATION/REMEDIAL ACTIONS

Due to the low permeability, low hydraulic conductivity ( $6.22 \times 10^{-9}$  cm/sec), and low recovery rates (<0.75 gal/day) observed on Site, M&A does not feel that there is an appropriate remedial action that will remove PCB from the subsurface in the short term. M&A has performed ongoing NAPL removal efforts at the Site for 5+ years which have reduced NAPL occurrence and would appear to be an effective means at additional PCB reductions. Based on available information and ongoing consultation with the IEPA in regards to aerial extent of PCB contamination, M&A proposes the installation of 2-3 additional monitoring wells in the northwest region of the HTB and 1-2 monitoring wells outside the northwestern wall of the HTB during Fall 2006 to confirm the extent of PCBs. Upon completion of installation M&A would conduct another full comprehensive round of groundwater and NAPL sampling utilizing low flow sampling techniques to corroborate our April/May data in Fall 2006.

Based upon results obtained from the sampling event, M&A recommends allowing Bodycote Thermal Processing to:

- Continue with its Voluntary Cleanup Program under IEPA in regards to LNAPL and DNAPL recovery efforts to the maximum extent practicable; continued removal of LNAPL and DNAPL will likely result in further reductions in PCB contamination at the Site;
- Maintain constructed engineered barriers, utilizing existing concrete slab flooring currently present over areas of residual soil impacts, to eliminate potential exposure via the industrial/commercial inhalation and ingestion pathways to the limits specified in IEPA conditional approval letters;
- Ongoing periodic training of Bodycote Thermal Processing involved in the project as to appropriate PCB waste management procedures.

Based on analytical data trends observed to date, M&A proposes that continued NAPL recovery serves as the most feasible course of action for PCB contamination removal. M&A recommends continued NAPL recovery to the maximum extent practicable coupled with long term monitoring and data analysis. All PCB contaminated NAPL and/or groundwater wastes removed from the subsurface will be disposed of at an appropriate permitted facility.

## **IX. CONTINGENCY PLAN**

Based on analytical results obtained during future sampling events, if concentrations of PCBs increase drastically new NAPL/groundwater recovery methodologies may be implemented consisting of either:

- Total Fluid Recovery – install several recovery pumps at select locations to recover and prevent the migration of contaminated groundwater. Groundwater and NAPL will be extracted from the subsurface, transferred to a holding tank and subsequently transported off Site to an appropriate disposal facility.
- Induced Negative Vacuum – supplying a slight negative pressure to NAPL containing monitoring wells. The slight negative pressure would increase NAPL production without inducing increased groundwater flow to those wells. Hand bailing of LNAPL would be performed on a routine basis. NAPL would be place in an appropriate container and disposed of appropriately.

## **X. SUMMARY**

- A comprehensive geologic exploration was performed by M&A in the late 1990's to develop a Conceptual Site Model (CSM), data from this geologic exploration was used in conjunction with more recent exploration data and determined that aquifer characteristics signify a low potential for contaminant migration due to low hydraulic conductivities ( $6.22 \times 10^{-9}$  cm/sec) and low recharge rates (<0.75 gal/day);
- A Remedial Action Plan was submitted and approved for TCE and NAPL contamination remediation of the Site by IEPA in 2000;
- PCBs were initially detected in NAPL during routine profiling of remedial wastes;
- Supplemental groundwater/NAPL sampling performed following that initial discovery indicates a decreasing PCB occurrence trend;
- M&A recommends installation of 4-5 additional monitoring wells to confirm the nature and extent of PCB contamination and to further verify that PCBs are not migrating off Site through a preferential pathway;
- M&A recommends the continued removal of NAPL to the maximum extent practicable coupled with long term monitoring, maintenance of engineered barriers already in existence, and implementation of a deed restriction for the contaminated area as the remedial action for PCBs observed at the Site.

## TABLES



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**TABLE 1**  
**BODYCOTE THERMAL PROCESSING**  
**HEAT TREATMENT BUILDING**  
**SUMMARY OF GROUNDWATER LABORATORY ANALYTICAL RESULTS**

GW Samples			Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
TACO Tier I Standard			2.5	2.5	2.5	2.5	2.5	2.5	2.5
WELL	AQUIFER	DATE	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
MCA-2	Shallow	10/02/2002	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		10/23/2003	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/18/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MCA-5	Shallow	5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/17/2006 <sup>(2)</sup>	-	-	-	-	-	-	-
		5/15/2006	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
M&A-103	Shallow	5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	<b>4.99</b>	< 0.5	< 0.5
		4/17/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
M&A-104	Shallow	10/02/2002	< 0.5	< 1.0	< 0.5	<b>1.6</b>	< 0.5	< 0.5	< 0.5
		10/23/2003	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/17/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
M&A-105	Shallow	10/02/2002	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		10/22/2003	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/19/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
M&A-106	Shallow	5/15/2006	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
M&A-109	Deep	5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/17/2006 <sup>(1)</sup>	-	-	-	-	-	-	-
M&A-110	Intermed	5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	<b>12.2</b>	< 0.5	< 0.5
		4/17/2006 <sup>(1)</sup>	-	-	-	-	-	-	-
		5/15/2006	< 0.4	< 0.4	< 0.4	<b>5.92</b>	< 0.4	< 0.4	< 0.4
M&A-111	Intermed	10/02/2002	< 25	< 50	< 25	<b>600</b>	< 25	<b>154</b>	< 25
		10/23/2003	< 0.5	< 1.0	< 0.5	< 0.5	<b>3.73</b>	< 0.5	< 0.5
		5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/18/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
M&A-112	Shallow	10/02/2002	< 0.5	< 1.0	< 0.5	<b>5.9</b>	< 0.5	<b>2.8</b>	< 0.5
		10/23/2003	< 1.0	< 2.0	< 1.0	< 1.0	<b>17.7</b>	<b>9.04</b>	< 1.0
		5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	<b>13.3</b>	< 0.5	< 0.5
		4/18/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
M&A-113	Intermed	5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	<b>15.8</b>	< 0.5	< 0.5
		4/19/2006	< 1.0	< 1.0	< 1.0	<b>15.3</b>	< 1.0	< 1.0	< 1.0
M&A-114	Shallow	10/02/2002	< 0.5	< 1.0	< 0.5	<b>16.8</b>	< 0.5	<b>13.8</b>	< 0.5
		4/17/2006 <sup>(3)</sup>	-	-	-	-	-	-	-
M&A-115	Intermed	10/02/2002	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		10/23/2003	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/19/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
M&A-116	Shallow	5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/18/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
		5/15/2006	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
M&A-119	Intermed	5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/18/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
M&A-121	Intermed	5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/18/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
M&A-122	Intermed	5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/19/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
M&A-124	Shallow	5/15/2006	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
M&A-126	Intermed	5/18/2004	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		4/18/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
M&A-301	Shallow	4/19/2006	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Notes: ug/L - micrograms per liter  
PCBs analysis performed via EPA Method 8082  
TACO - Tiered Approach Toward Corrective Action  
TACO Tier I Standards based on the Illinois Environmental Protection Agency Title 35, Admin Code 742.505  
Tier 1 Remediation Objectives for Class II Groundwater  
Tier 2 GROs must be established for compounds exceeding Tier 1 Standards  
Shading indicates compound exceeds established TACO Tier I standard.  
**BOLD** values indicate compound was detected  
(1) Not sampled, well was dry.  
(2) Not sampled, insufficient water recharge to complete sampling.  
(3) Not sampled, well contained no water, only Free Product  
Aquifer = portion of the aquifer the monitoring well is screened in; Shallow ~2-12', Intermediate ~23-35'  
Deep ~ 39.5-49.5'  
-- = Not Sampled

**TABLE 2**  
**BODYCOTE THERMAL PROCESSING**  
**HEAT TREATMENT BUILDING**  
**SUMMARY OF NON AQUEOUS PHASE LIQUID LABORATORY ANALYTICAL RESULTS**

PCBs			Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
WELL	AQUIFER	DATE	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
M&A-111	Intermed	9/19/2000	<0.05	<0.05	<0.05	<0.05	3,308	<0.05	<0.05
M&A-113	Intermed	9/19/2000	<50	<50	<50	<50	1,600	<50	<50
		5/17/2004	< 50	< 50	< 50	< 50	946	< 50	< 50
		4/19/2006	< 0.0326	< 0.0326	< 0.0326	< 0.0326	< 0.0326	< 0.0326	< 0.0326
M&A-114	Shallow	5/17/2004	< 0.05	< 0.05	< 0.05	< 0.05	1.72	< 0.05	< 0.05
		4/17/2006	< 0.128	< 0.128	< 0.128	< 0.128	41.4	< 0.128	< 0.128
M&A-301	Shallow	5/17/2004	< 0.5	< 0.5	< 0.5	< 0.5	0.67	< 0.5	< 0.5
		4/19/2006	-	-	-	-	-	-	-
MCA-2	Shallow	5/17/2004	-	-	-	-	-	-	-
		4/17/2006	< 0.132	< 0.132	< 0.132	< 0.132	< 0.132	< 0.132	< 0.132

**Notes:** mg/kg - milligrams per kilogram.  
PCBs analysis performed via EPA Method 8082  
Shading indicates compound was detected in NAPL.  
Aquifer = portion of the aquifer the monitoring well is screened in; Shallow ~2-12', Intermediate ~23-35'  
Deep ~ 39.5-49.5'  
- = no product observed/available to sample

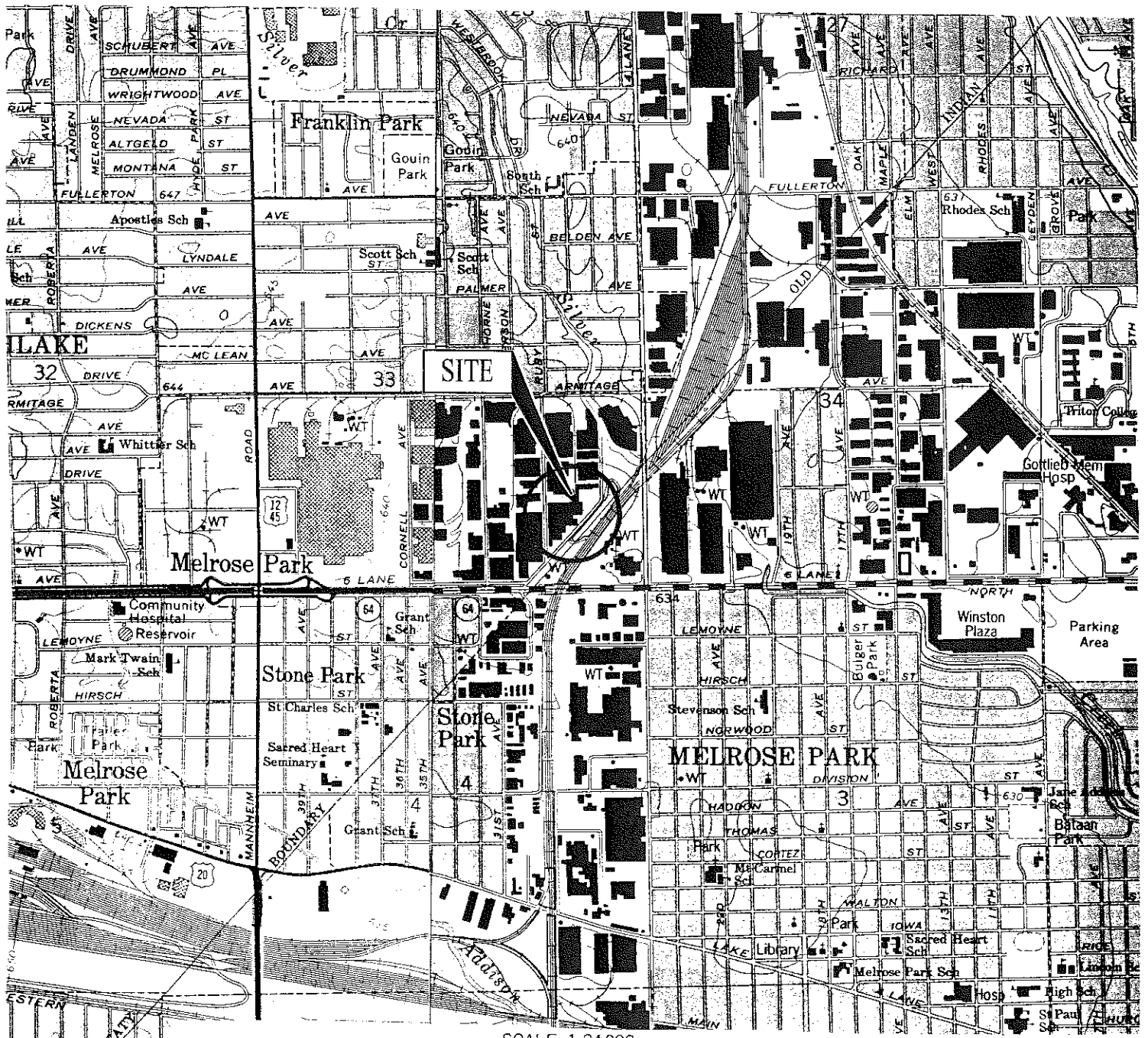
TABLE 3  
BODYCOTE HTB  
MELROSE PARK, IL  
APRIL 2006 GROUNDWATER ELEVATIONS

Well #	TOC	DTB	DTW	Actual DTB	GWE
MCA-2	634.45	10.99	4.35	10.95	630.1
MCA-3	634.51	7.67	4.02	7.7	630.5
MCA-4	634.34	9.75	2.9	10	631.4
MCA-5	634.49	7.79	6.5	7.8	628.0
M&A-101	634.48	20	18.65	19.2	615.8
M&A-103	634.53	13.5	9.95	12.9	624.6
M&A-104	634.53	12	7.12	11.9	627.4
M&A-105	634.57	12	4.35	11.6	630.2
M&A-106	634.56	13	6.92	12.5	627.6
M&A-107	634.52	12	11.8	11.85	622.7
M&A-109	634.52	49	dry	48.5	-
M&A-110	634.52	30	dry	29.8	-
M&A-111	634.39	33	27.81	32.8	606.6
M&A-112	634.47	15	8.98	15.2	625.5
M&A-113	634.47	33	Tied into DNAPL Recovery System		
M&A-114	634.49	15	14.05	15.4	620.4
M&A-115	634.48	33	28.31	33	606.2
M&A-116	634.48	15	6.02	15.1	628.5
M&A-117	634.48	30	28	29.7	606.5
M&A-118	634.47	14.5	5.82	-	628.7
M&A-119	634.46	34	28.6	33.5	605.9
M&A-120	634.47	15	3.9	14.8	630.6
M&A-121	634.49	33	31.35	33.3	603.1
M&A-122	632.99	33	26.1	33	606.9
M&A-123	632.91	46.5	dry	-	-
M&A-124	634.49	15.5	7.5	15.2	627.0
M&A-125	634.47	49	dry	49	-
M&A-126	634.45	35	27.55	34.25	606.9
M&A-127	634.52	30	28.83	29.9	605.7
M&A-208	-	15	5.5	-	-
M&A-301	633.46	13	8.16	13	625.3
M&A-302	633.41	13	5.25	-	628.2

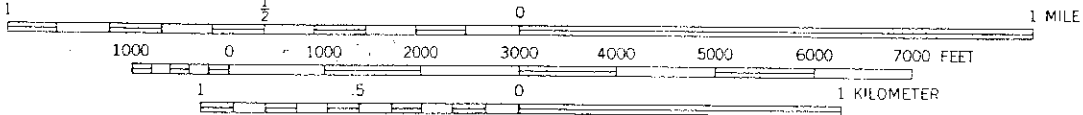
NOTES: - = Not Gauged



## FIGURES



SCALE 1:24 000



CONTOUR INTERVAL 5 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

RIVER FOREST QUADRANGLE  
ILLINOIS-COOK CO.  
7.5 MINUTE SERIES (TOPOGRAPHIC)



QUADRANGLE LOCATION

UTM GRID AND 1993 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

**BODYCOTE THERMAL PROCESSING, INC.**  
MELROSE PARK, ILLINOIS



Mabbett & Associates, Inc.  
Environmental Consultants & Engineers

**SITE  
LOCATION MAP**

SCALE: AS NOTED

DR BY: DJA

DATE: 8.15.06

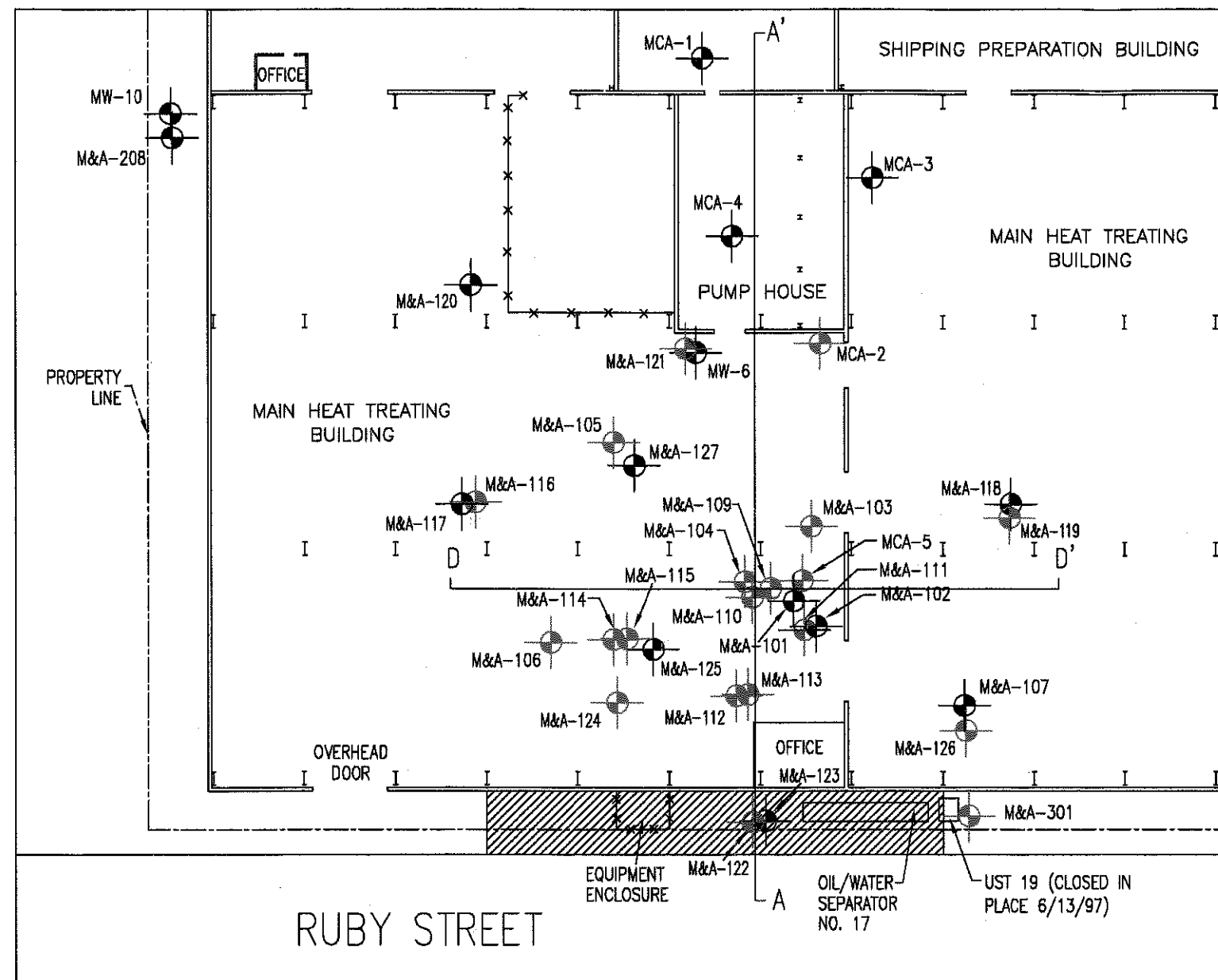
AP BY: CLM

DWG NO.

L-1

PROJ NO.

1998002.200



## NOTES:

1. MONITORING WELL AND BORING LOCATIONS INSTALLED PRIOR TO 1997 ARE BASED ON FIELD MEASUREMENTS TAKEN BY M&A PERSONNEL.
2. MONITORING WELL AND BORING LOCATIONS INSTALLED DURING AND AFTER 1997 ARE BASED ON FIELD MEASUREMENTS TAKEN BY AN ILLINOIS REGISTERED LAND SURVEYOR.

## LEGEND:

- MONITORING WELL LOCATION
- MONITORING WELL SAMPLED FOR PCB's
- APPROXIMATE PROPERTY LINE
- CHAIN LINK FENCE
- SUPPORTING COLUMN
- ENGINEERED BARRIER: CONCRETE SLAB



## SCALE:



**BODYCOTE THERMAL PROCESSING, INC.**  
MELROSE PARK, ILLINOIS



HEAT TREATMENT BUILDING  
PCB MONITORING WELL LOCATIONS

SCALE: 1"=40'-0"

DATE: 8-12-06

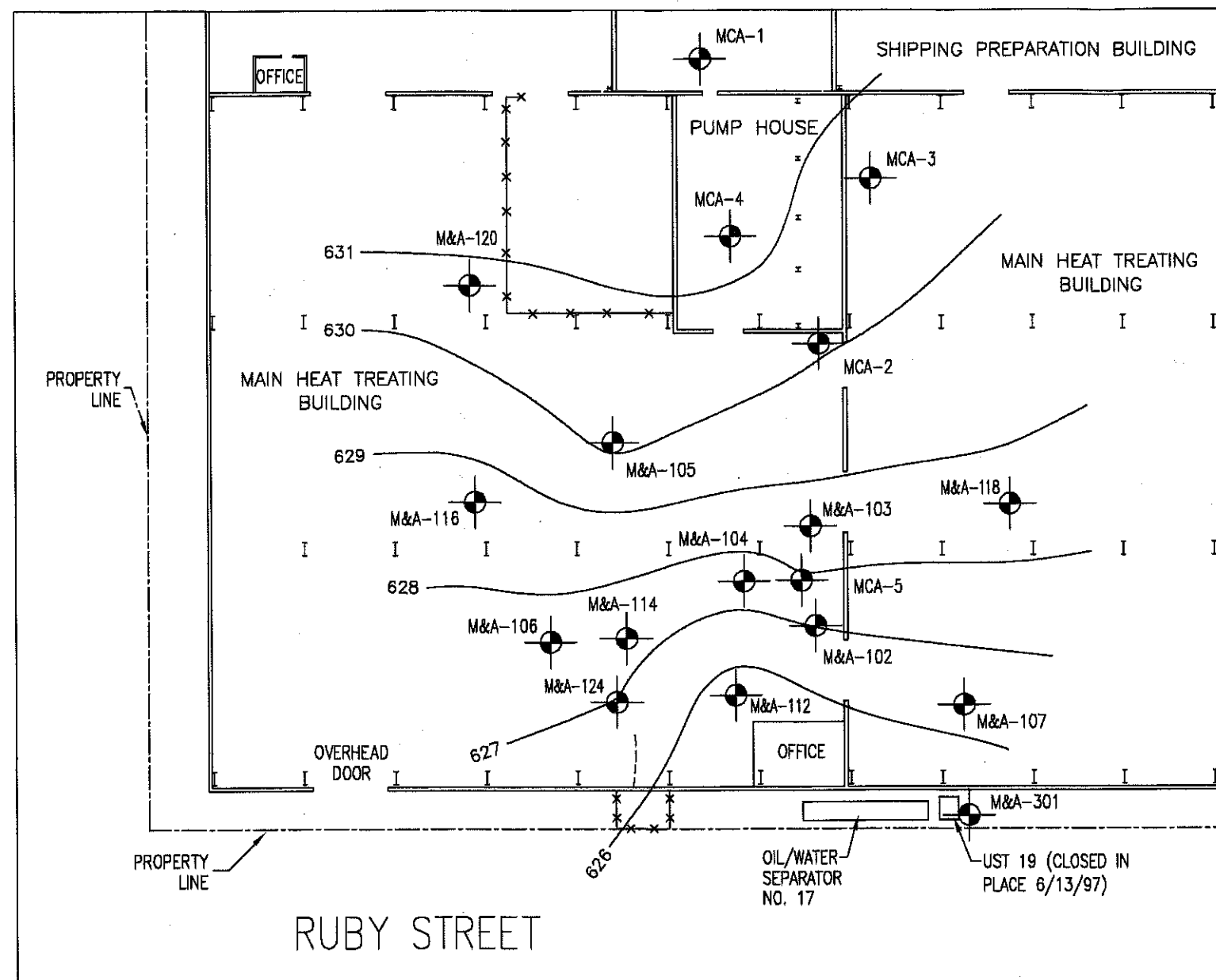
DR BY: DJA

AP BY: *[Signature]*

DRAWING NO.

L-2






PROJECT NO.  
1998002.200

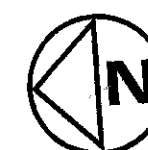


## NOTES:

1. MONITORING WELL LOCATIONS INSTALLED PRIOR TO 1997 ARE BASED ON FIELD MEASUREMENTS TAKEN BY M&A PERSONNEL.
2. MONITORING WELL LOCATIONS INSTALLED DURING AND AFTER 1997 ARE BASED ON FIELD MEASUREMENTS TAKEN BY AN ILLINOIS REGISTERED LAND SURVEYOR.

## LEGEND:

-  MONITORING WELL LOCATION
-  APPROXIMATE PROPERTY LINE
-  CHAIN LINK FENCE
-  SUPPORTING COLUMN
-  1 FT. SHALLOW GROUNDWATER CONTOURS (April 2006)



## SCALE:



**BODYCOTE THERMAL PROCESSING, INC.**  
MELROSE PARK, ILLINOIS

**M&A**  
Mabbett & Associates  
Environmental Consultants & Engineers

SHALLOW GROUNDWATER  
ELEVATION CONTOURS

SCALE: 1"=40'-0"

DR BY: DJA

DATE: 8.15.06

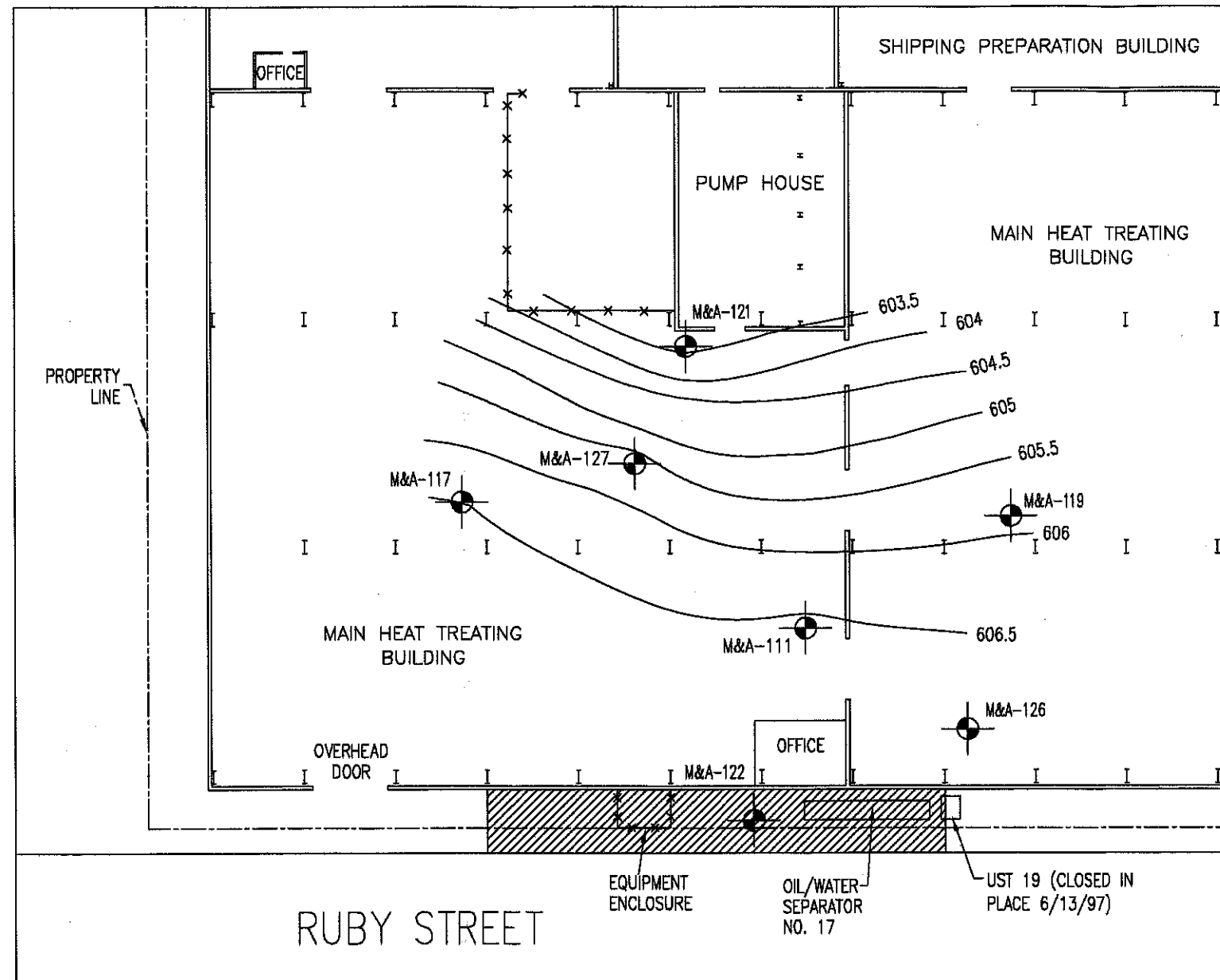
AP BY: CLM

DRAWING NO.

L-4

PROJECT NO.

1998002.200



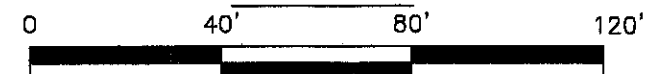
## NOTES:

1. MONITORING WELL AND BORING LOCATIONS INSTALLED PRIOR TO 1997 ARE BASED ON FIELD MEASUREMENTS TAKEN BY M&A PERSONNEL.
2. MONITORING WELL AND BORING LOCATIONS INSTALLED DURING AND AFTER 1997 ARE BASED ON FIELD MEASUREMENTS TAKEN BY AN ILLINOIS REGISTERED LAND SURVEYOR.

## LEGEND:

- MONITORING WELL LOCATION
- APPROXIMATE PROPERTY LINE
- CHAIN LINK FENCE
- SUPPORTING COLUMN
- ENGINEERED BARRIER: BITUMINOUS CONCRETE
- .5 FT. INTERMEDIATE GROUNDWATER CONTOURS (April 2006)

## SCALE:



**BODYCOTE THERMAL PROCESSING, INC.**  
MELROSE PARK, ILLINOIS

HEAT TREATMENT BUILDING  
INTERMEDIATE GROUNDWATER  
CONTOUR PLAN

DRAWING NO.

L-5

PROJECT NO.  
1998002.200

Mabbett & Associates  
Environmental Consultants & Engineers

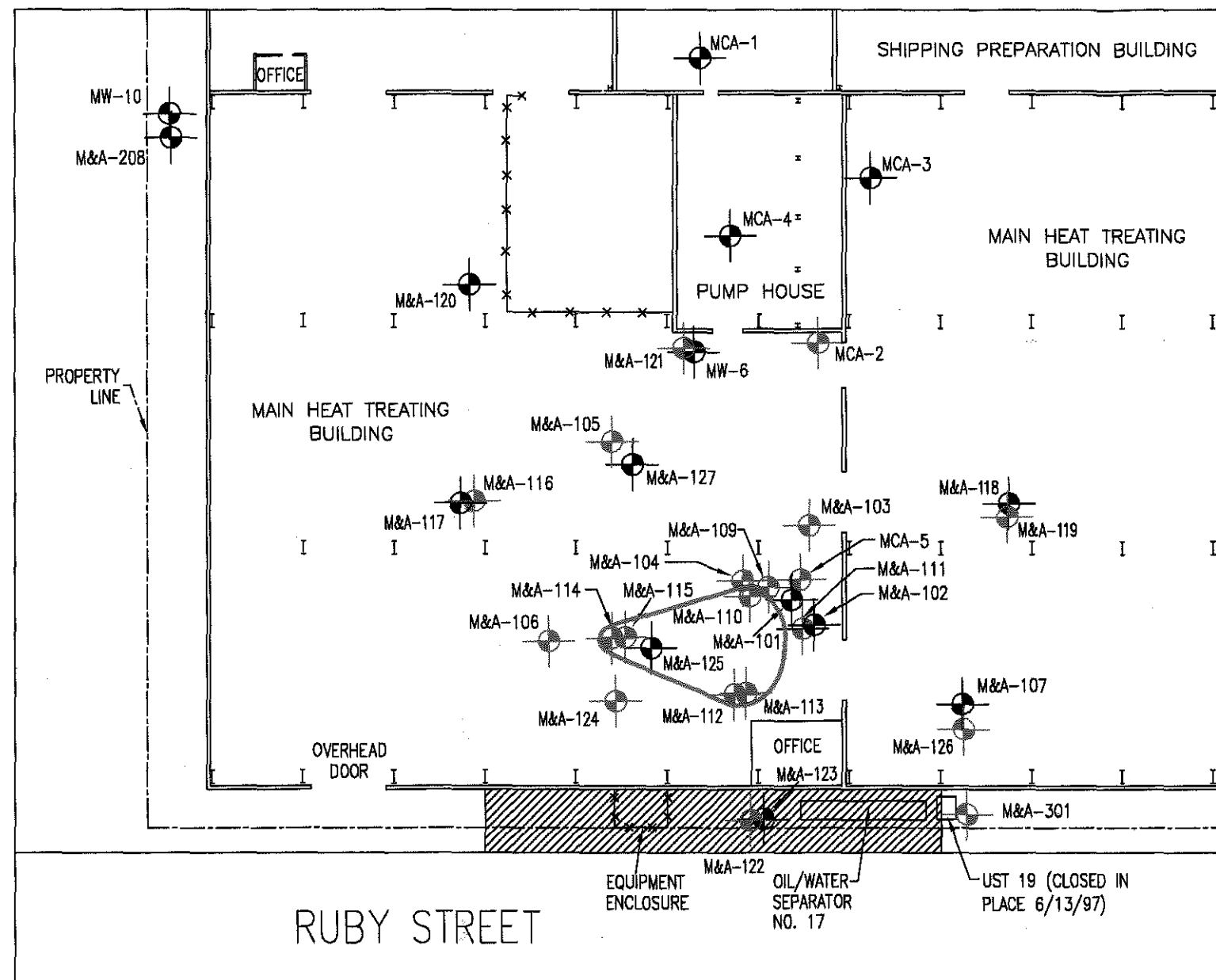
SCALE: 1"=40'-0"

DR BY: DJA

DATE: 8.15.06

AP BY: CEM

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Mabbett & Associates, Inc.



## NOTES:

1. MONITORING WELL AND BORING LOCATIONS INSTALLED PRIOR TO 1997 ARE BASED ON FIELD MEASUREMENTS TAKEN BY M&A PERSONNEL.
2. MONITORING WELL AND BORING LOCATIONS INSTALLED DURING AND AFTER 1997 ARE BASED ON FIELD MEASUREMENTS TAKEN BY AN ILLINOIS REGISTERED LAND SURVEYOR.

## LEGEND:

- MONITORING WELL LOCATION
- MONITORING WELL SAMPLED FOR PCB's
- APPROXIMATE PROPERTY LINE
- CHAIN LINK FENCE
- SUPPORTING COLUMN
- ENGINEERED BARRIER: BITUMINOUS CONCRETE
- AREA OF PCB GROUNDWATER/NAPL CONTAMINATION

## SCALE:



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**BODYCOTE THERMAL PROCESSING, INC.**  
MELROSE PARK, ILLINOIS

**M&A**  
Mabbett & Associates  
Environmental Consultants & Engineers

AREA OF PCB CONTAMINATION PLAN

SCALE: 1"=40'-0"

DR BY: DJA

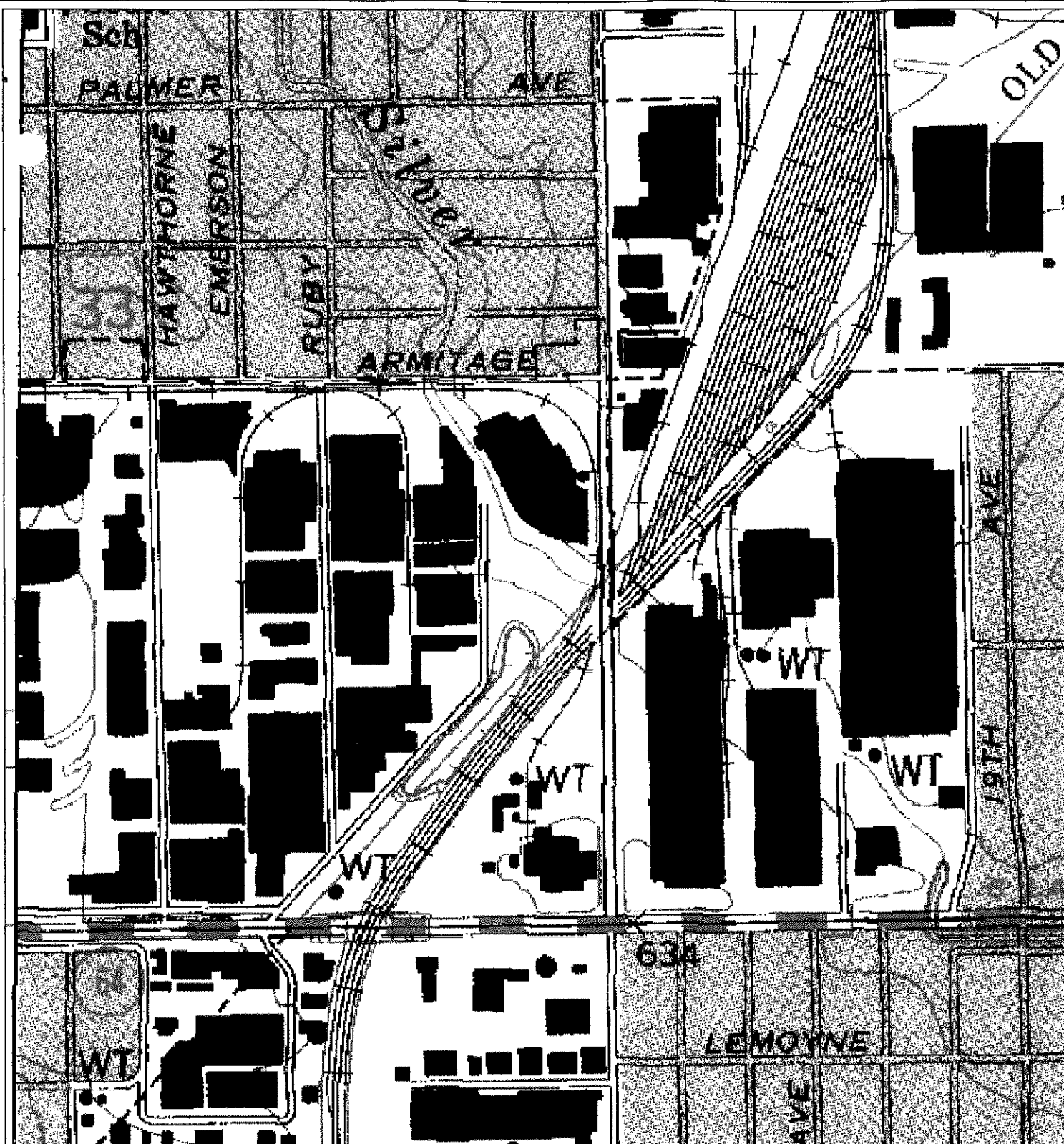
DATE: 8.15.06

AP BY: CLM

DRAWING NO.

L-6

PROJECT NO.  
1998002.200



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Mabbett & Associates, Inc

• CONTOUR INTERVAL - 5 FEET

BODYCOTE THERMAL PROCESSING, INC.  
MELROSE PARK, ILLINOIS

SITE AREA  
TOPOGRAPHY

DWG NO.

L-7

**M&A**<sup>TM</sup>  
Mabbett & Associates  
Environmental Consultants & Engineers

SCALE: 1"=200'

DR BY: DJA

DATE: 8.14.06

AP BY: CLM

PROJ NO.

1998002.200





**APPENDIX A  
BORING LOGS  
AND  
MONITORING WELL INSTALLATION LOGS**

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

Five Alfred Circle, Bedford, Massachusetts 01730 • (617) 275-6050 • Fax: (617) 275-5651

PROJECT/CLIENT <u>UNDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____	
DRILLING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/11/97</u> / <u>8/11/97</u>		WELL NO. <u>M&amp;A-111</u>		
SITE NO. <u>0311860001</u>		COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 1 OF 3	
QUADRANGLE <u>RIVER FOREST, IL</u>		SECTION <u>33.2b</u>	T. <u>40N</u>	R. <u>12E</u>		DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>		FOREMAN <u>DENNIS</u>		
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>GGL</u>		CHECKED BY <u>DJS</u>	DATE <u>10/6/97</u>	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
1		3					CONCRETE
2	SS-1	4 8 8	24	16	120	NO ODOR	(FILL) DAMP, VERY STIFF, GRAY/TAN SILT, SOME CLAY, LITTLE COARSE SAND, LITTLE FINE TO MEDIUM GRAVEL, TRACE BLACK MATERIAL.
3		3 3					
4	SS-2	4 5 3	24	14	180	NO ODOR HORIZONTAL AND DIAGONAL FRACTURING	(LACUSTRINE) DAMP, STIFF, TAN/YELLOW SILT, SOME CLAY, LITTLE COARSE SAND, LITTLE FINE GRAVEL.
5		5					
6	SS-3	6 7 4	24	18	260	SLIGHT SOLVENT ODOR TAN/YELLOW MOTTLED WET DIAGONAL FRACTURING	(LACUSTRINE) DAMP, STIFF, GRAY SILT, SOME CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
7		5					
8	SS-4	7 8 8	24	18	310	SOLVENT ODOR	(LACUSTRINE) SIMILAR TO SS-3
9		9					
10	SS-5	11 11	24	10	240	SOLVENT ODOR WET DIAGONAL FRACTURING	(LACUSTRINE) SIMILAR TO SS-3
11		3					
12	SS-6	4 7 7	24	3	300	SOLVENT ODOR	(LACUSTRINE) MOIST, STIFF, GRAY SILT, SOME CLAY, LITTLE FINE GRAVEL, TRACE COARSE SAND.
13		2					
14	SS-7	2	24	12	220	SOLVENT ODOR	(LACUSTRINE) DAMP, STIFF, GRAY CLAY, SOME SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

RCD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

===== CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

===== CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

Five Alfred Circle, Bedford, Massachusetts 01730 • (617) 275-6050 • Fax: (617) 275-5651

PROJECT/CLIENT <u>UNDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____
RING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/11/97</u> / <u>8/11/97</u>		WELL NO. <u>M&amp;A-111</u>	
SITE P. NO. <u>0311860001</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 2 OF 3	
QUADRANGLE <u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u>	R. <u>12E</u>	DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>	
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>		FOREMAN <u>DENNIS</u>	
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>GGL</u>		CHECKED BY <u>DJS</u> DATE <u>10/6/97</u>	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
		3				HORIZONTAL FRACTURING	
		7					
15		2					
		2					
16	SS-8	4	24	18	22	SLIGHT SOLVENT ODOR	(LACUSTRINE) MOIST, STIFF, GRAY CLAY, SOME SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.
		6					
17		6					
		8					
18	SS-9	10	24	24	18.0	NO ODOR MOIST DIAGONAL/ HORIZONTAL FRACTURING	(LACUSTRINE) DAMP, VERY STIFF, GRAY CLAY AND SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.
		10					
19		3					
		6					
20	SS-10	18	24	24	2.5	NO ODOR	(LACUSTRINE) SIMILAR TO SS-9
		29					
21		23					
		38					
22	SS-11	67	24	22	9.5	NO ODOR SHALY CLEAVAGE & HORIZONTAL FRACTURING FOR ENTIRE FINE SAND STRATUM	(LACUSTRINE) DAMP, VERY DENSE, GRAY VERY FINE SAND AND SILT, TRACE COARSE SAND.
		75					
23		20					
		20					
24	SS-12	27	24	22	0.0	NO ODOR	(LACUSTRINE) SIMILAR TO SS-11
		28					
25		7					
		7					
26	SS-13	22	24	20	0.0	NO ODOR HORIZONTAL DIAGONAL FRACTURING	(LACUSTRINE) DAMP, STIFF GRAY SILT, LITTLE CLAY, LITTLE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL.
		22					
27		8					
		16					
28	SS-14		24	22	1.5	NO ODOR	(LACUSTRINE) DAMP, LOOSE, BLACK/WHITE MEDIUM SAND, TRACE SILT.

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

LN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID,  
EQUIPPED WITH 10.2 eV LAMP.

ROD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

Five Alfred Circle, Bedford, Massachusetts 01730 • (617) 275-6050 • Fax: (617) 275-5651

PROJECT/CUENT <u>LUNDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____
RING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/11/97</u> / <u>8/11/97</u>		WELL NO. <u>M&amp;A-111</u>	
E.P. NO. <u>0311860001</u>		COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 3 OF 3
QUAD. <u>SLE</u> <u>RIVER FOREST, IL</u>		SECTION <u>33.2b</u>	T. <u>40N</u> R. <u>12E</u> DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>		
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>		FOREMAN <u>DENNIS</u>	
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>GGL</u>	CHECKED BY <u>DJS</u>	DATE <u>10/6/97</u>	

DEPTH FT.	TYPE and NO.	SAMPLE				REMARKS	SOIL AND ROCK DESCRIPTIONS
		BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
29	SS-15	18				NO ODOR DIAGONAL FRACTURING	(LACUSTRINE) DAMP/DRY, VERY STIFF, GRAY SILT, LITTLE CLAY, LITTLE MEDIUM GRAVEL, TRACE COARSE SAND.
		17					
		8					
30	SS-15	15	24	18	0.0	NO ODOR BLACK & WHITE BANDING	(OUTWASH) WET, MEDIUM DENSE, BLACK/WHITE MEDIUM SAND, TRACE COARSE SAND, TRACE SILT.
		19					
		10					
31	SS-16	8					
		10					
		18	24	22	0.0		
32	SS-16	22					
		9					
		12	24	18	0.0		
33	SS-17	17				NO ODOR	(TILL) MOIST/DAMP, VERY STIFF, GRAY SILT, LITTLE CLAY, LITTLE COARSE SAND, LITTLE FINE TO MEDIUM GRAVEL.
		11					
34	SS-17						
35	SS-17						BOTTOM OF BORING AT 35 FEET. WELL INSTALLED AT 33 FEET.  NOTES 1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT.  2. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCEMENT.

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.  
SPLIT SPOON SAMPLER

N=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID,  
EQUIPPED WITH 10.2 eV LAMP.

ROD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

===== CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

===== CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

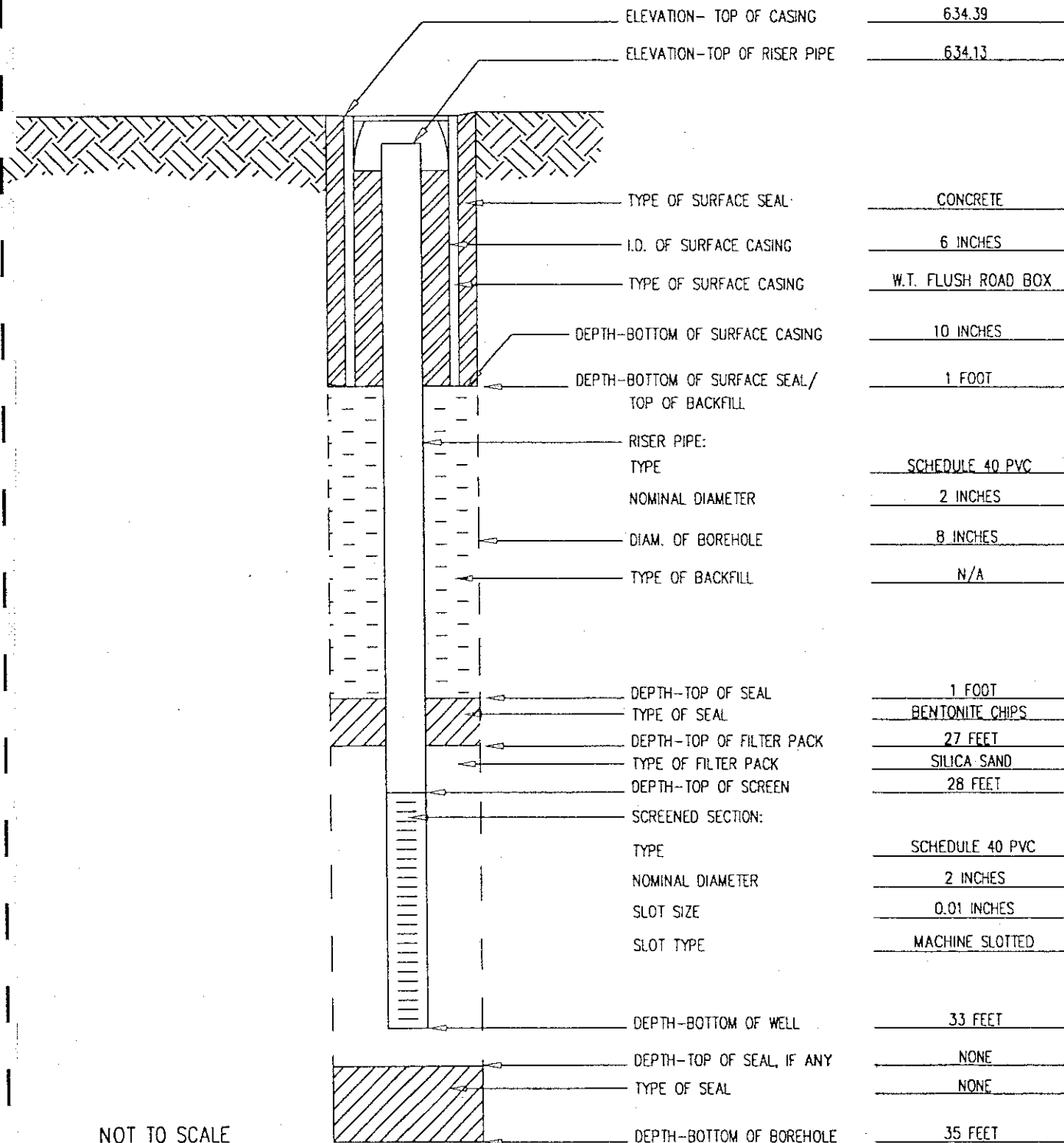
Five Alfred Circle, Bedford, Massachusetts 01730 • (617) 275-6050 • Fax: (617) 275-5651

## MONITORING WELL INSTALLATION DIAGRAM

M&A-111

PROJECT CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82  
 LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK IL.  
 CONTRACTOR D&G DRILLING DRILLER DENNIS  
 LOGGED BY GGL DATE 8/11/97  
 CHECKED BY DJS DATE 10/6/97

LOCATION SEE SITE PLAN



NOT TO SCALE

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

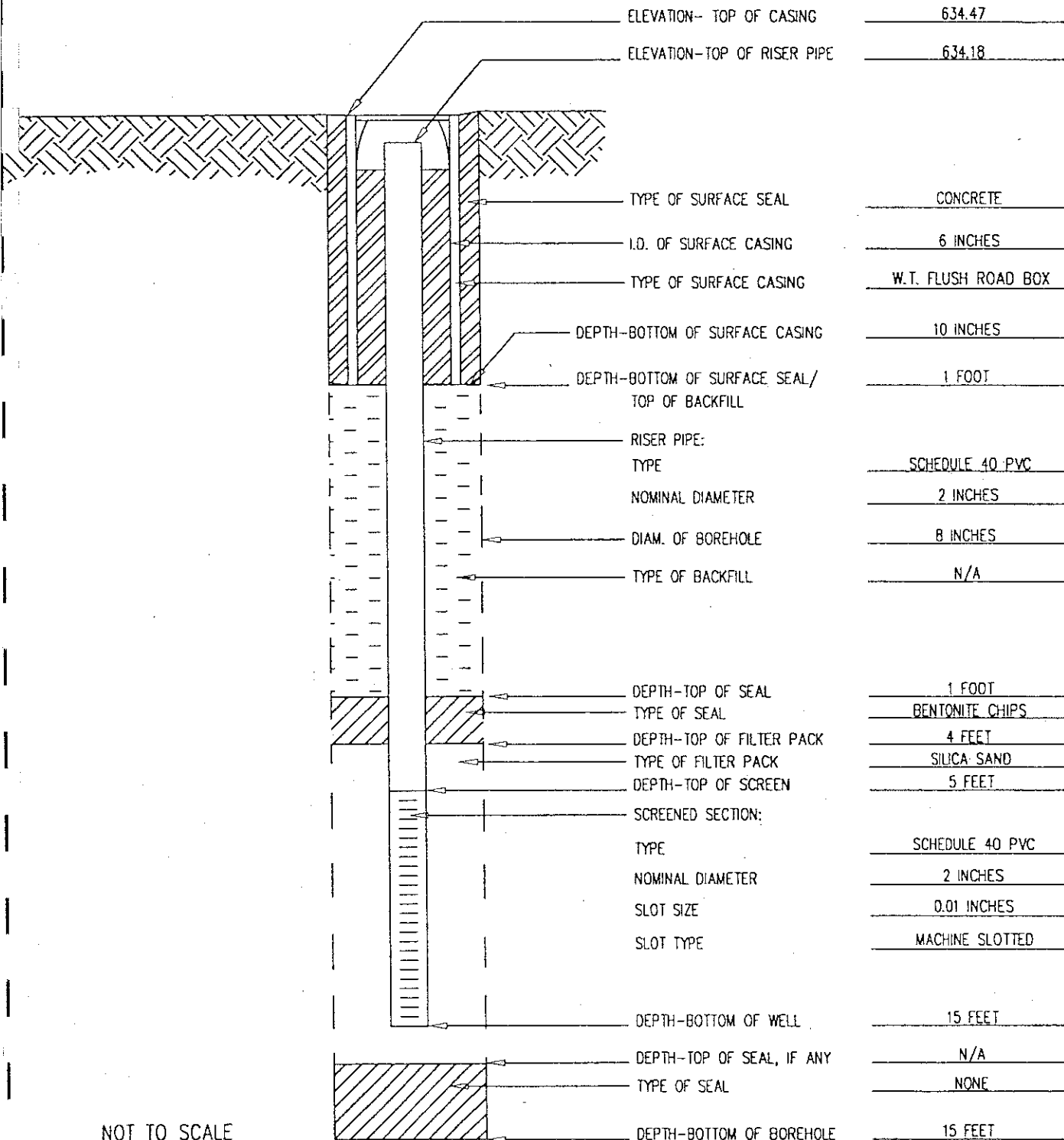
Five Alfred Circle, Bedford, Massachusetts 01730 • (617) 275-6050 • Fax: (617) 275-5651

## MONITORING WELL INSTALLATION DIAGRAM

M&A-112

PROJECT CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82  
 LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK IL.  
 CONTRACTOR D&G DRILLING DRILLER DENNIS  
 LOGGED BY GCL DATE 8/12/97  
 CHECKED BY DJS DATE 10/6/97

LOCATION SEE SITE PLAN, REFER TO  
BORING LOG M&A 113



# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

Five Alfred Circle, Bedford, Massachusetts 01730 • (617) 275-6050 • Fax: (617) 275-5651

PROJECT/CLIENT <u>LINDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>	PROJ. NO. <u>87024.82</u>	BORING NO. _____
RING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/11/97</u> / <u>8/12/97</u>	WELL NO. <u>M&amp;A-113</u>	
SITE FILE NO. <u>0311860001</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>	PG. 1 OF 3	
QUADRANGLE <u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u> R. <u>12E</u>	DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>	
GROUND ELEVATION (NGVD) _____	CONTRACTOR <u>D&amp;G DRILLING, INC.</u>		FOREMAN <u>DENNIS</u>	
GROUNDWATER EL./DEPTH _____	LOGGED BY <u>DJS/GGL</u>	CHECKED BY <u>GGL</u>	DATE <u>10/6/97</u>	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
1		4					CONCRETE
2	SS-1	10	24	16	0.0		(FILL) DAMP, MEDIUM DENSE, GRAY/BROWN MEDIUM SAND, LITTLE COARSE SAND.
3		8					(FILL) DAMP, MEDIUM DENSE, BLACK MEDIUM SAND, TRACE FINE GRAVEL.
4	SS-2	5	24	16	7.0		(LACUSTRINE) DAMP, FIRM, GRAY SILT AND CLAY, LITTLE FINE GRAVEL, TRACE MEDIUM SAND, TRACE COARSE SAND
5		2					
6	SS-3	4	24	15	125		(LACUSTRINE) DAMP, FIRM, GRAY SILT AND CLAY, TRACE MEDIUM SAND, TRACE COARSE SAND
7		3					
8	SS-4	4	24	2	20		(LACUSTRINE) SIMILAR TO SS-3
9		7					
10	SS-5	6	24	24	5.0		(LACUSTRINE) SIMILAR TO SS-3
11		9					
12	SS-6	12	24	24	5.0	NO ODOR MINOR DIAGONAL FRACTURING	(LACUSTRINE) DAMP, STIFF, TAN/LIGHT BROWN SILT AND CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
13		3					
14	SS-7	2	24	20	0.0	NO ODOR NO FRACTURING	(LACUSTRINE) SIMILAR TO SS-6

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER  
 LN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC=RECOVERY LENGTH OF SAMPLE  
 SS=SPLIT SPOON SAMPLE  
 S=SAMPLE TAKEN OFF AUGER  
 HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %  
 DEPTH=DEPTH BELOW GROUND SURFACE  
 (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)  
 ≡ WATER TABLE (APPROX)  
 — CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)  
 — CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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PROJECT/CLIENT <u>LINDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____
RING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/11/97</u> / <u>8/12/97</u>		WELL NO. <u>M&amp;A-113</u>	
TE FILE NO. <u>0311860001</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 2 OF 3	
QUAD <u>1E</u>	<u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u>	R. <u>12E</u>	DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>		FOREMAN <u>DENNIS</u>	
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>DJS/GGL</u>		CHECKED BY <u>GGL</u>	DATE <u>10/6/97</u>

DEPTH FT.	TYPE and NO.	SAMPLE				REMARKS	SOIL AND ROCK DESCRIPTIONS
		BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
15		3					
		4					
16	SS-8	1					
		2	24	18	4.0	NO ODOR WET AROUND GRAVEL, NO FRACTURING	(LACUSTRINE) MOIST, FIRM, GRAY SILT AND CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
		3					
17		3					
		1					
18	SS-9	1	24	18	0.0	NO ODOR WET AROUND GRAVEL, WET DIAGONAL FRACTURING	(LACUSTRINE) MOIST, FIRM, GRAY CLAY, SOME SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.
		3					
19		5					
		2					
20	SS-10	4	24	20	0.0	NO ODOR	(LACUSTRINE) DAMP, STIFF, GRAY SILT, LITTLE CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
		10					
21		24					
		11				NO ODOR MINOR DIAGONAL FRACTURING	
22	SS-11	20	24	20	0.0		(LACUSTRINE) DRY, VERY DENSE, GRAY VERY FINE SAND, SOME SILT, LITTLE FINE GRAVEL, TRACE COARSE SAND.
		24					
23		25				SHALY CLEAVAGE & HORIZONTAL FRACTURING FOR ENTIRE FINE SAND STRATUM	
		13					(LACUSTRINE) DRY, VERY STIFF, GRAY SILT, LITTLE VERY FINE SAND, LITTLE FINE GRAVEL, TRACE COARSE SAND
24	SS-12	16	24	20	0.0	NO ODOR	
		28					(LACUSTRINE) MOIST/DAMP, DENSE, GRAY FINE SAND, TRACE SILT.
25		22					
		12					(LACUSTRINE) DAMP/DRY, MEDIUM DENSE, GRAY VERY FINE SAND AND SILT, TRACE COARSE SAND.
26	SS-13	16	24	22	0.0	NO ODOR	
		16					(LACUSTRINE) DAMP/DRY, VERY STIFF, GRAY SILT, SOME VERY FINE SAND, LITTLE FINE GRAVEL, TRACE COARSE SAND, TRACE CLAY.
27		18					
		5					
28	SS-14	13	24	20	280	STRONG SOLVENT ODOR	(LACUSTRINE) SIMILAR TO SS-13

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER	ROD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %
N=PENETRATION LENGTH OF SAMPLER OR CORE BARREL	DEPTH=DEPTH BELOW GROUND SURFACE (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)
REC=RECOVERY LENGTH OF SAMPLE	≡ WATER TABLE (APPROX)
SS=SPLIT SPOON SAMPLE	----- CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)
S=SAMPLE TAKEN OFF AUGER	===== CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)
HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.	



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

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	87024.82	BORING NO.	
RING LOCATION	SEE SITE PLAN	DATE START/FINISH	8/11/97 / 8/12/97			WELL NO.	M&A-113
SITE F. NO.	0311860001	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
QUADRANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N	R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	DJS/GGL	CHECKED BY	GGL	DATE	10/6/97

PG. 3 OF 3

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
29		18				3" MOIST FINE SAND VEIN NO FREE LIQUID AT 25.5 FEET	(LACUSTRINE) DRY, VERY STIFF, GRAY SILT, SOME VERY FINE SAND, TRACE COARSE SAND, TRACE FINE GRAVEL.
30	SS-15	17	24	22	320	STRONG SOLVENT ODOR NO DNAPL	(OUTWASH) WET, MEDIUM DENSE, GRAY FINE SAND, TRACE SILT, TRACE COARSE SAND.
31		3					(LACUSTRINE) DAMP, FIRM, GRAY SILT, LITTLE FINE GRAVEL, TRACE CLAY, TRACE COARSE SAND.
32	SS-16	11	24	22	320	STRONG SOLVENT ODOR DNAPL OBSERVED IN SOIL 31.5 TO 33 FEET	(OUTWASH) WET, MEDIUM DENSE, GRAY FINE SAND, TRACE SILT, TRACE COARSE SAND.
33		13					(OUTWASH) WET, LOOSE, GRAY FINE SAND, LITTLE SILT, LITTLE COARSE SAND.
34	SS-17	15	24	20	48	SOLVENT ODOR	(TILL) MOIST/DAMP, VERY STIFF, GRAY SILT, LITTLE CLAY, LITTLE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND.
35		4					BOTTOM OF BORING AT 35 FEET. WELL INSTALLED AT 33 FEET.
		5					NOTES 1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT.
		7					2. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCEMENT.
		14					
		24					

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER  
 PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC=RECOVERY LENGTH OF SAMPLE  
 SS=SPLIT SPOON SAMPLE  
 S=SAMPLE TAKEN OFF AUGER  
 HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

ROD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %  
 DEPTH=DEPTH BELOW GROUND SURFACE  
 (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)  
 WATER TABLE (APPROX)  
 CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)  
 CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

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## MONITORING WELL INSTALLATION DIAGRAM

M&A-113

PROJECT CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82

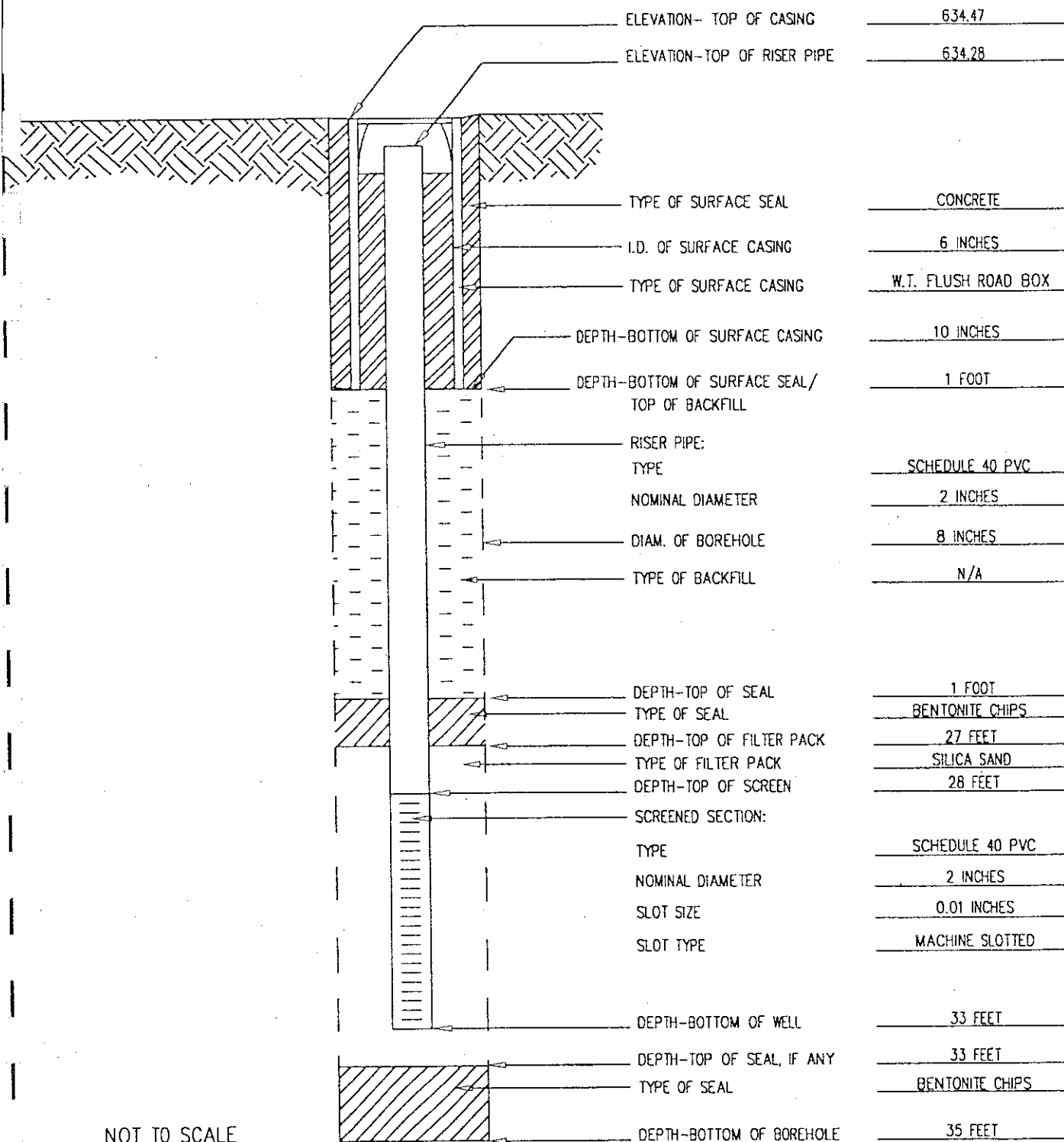
LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK II

CONTRACTOR D&G DRILLING DRILLER DENNIS

LOGGED BY GGL DATE 8/12/97

CHECKED BY DJS DATE 10/6/97

LOCATION SEE SITE PLAN



NOT TO SCALE

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## MONITORING WELL INSTALLATION DIAGRAM

M&A-114

PROJECT CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82

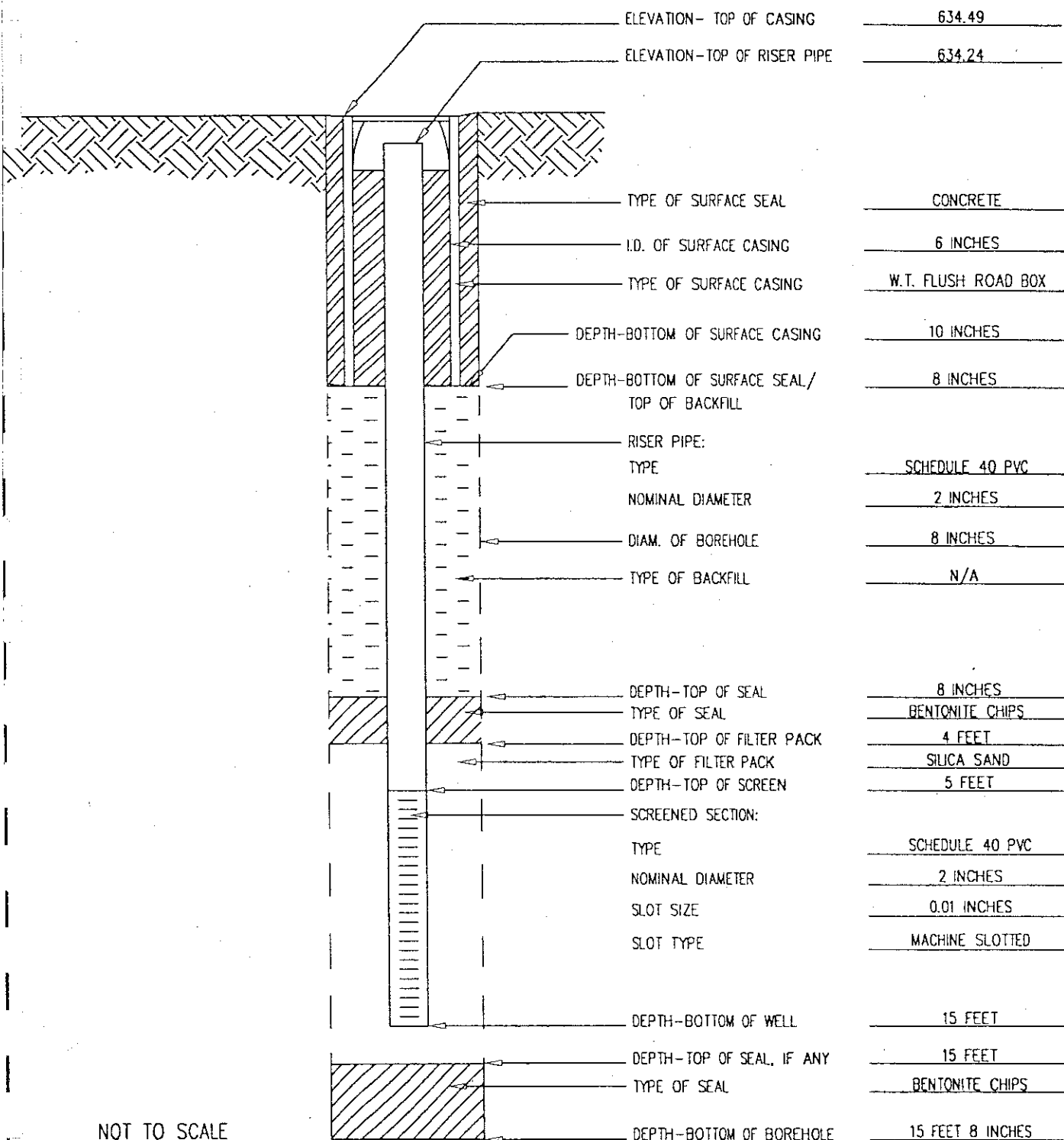
LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK, IL

CONTRACTOR D&G DRILLING DRILLER DENNIS

LOGGED BY DJS DATE 8/7/97

CHECKED BY GG DATE 10/6/97

LOCATION SEE SITE PLAN, REFER TO  
BORING LOG M&A-115



NOT TO SCALE

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	87024.82	BORING NO.	
RING LOCATION	SEE SITE PLAN	DATE START/FINISH	8/7/97 / 8/7/97	WELL NO.	M&A-115		
SITE F	IO. 0311860001	COUNTY	COOK	FEDERAL ID. NO.	10L005071808		
QUADRANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N	R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	DJS	CHECKED BY	GGL	DATE	10/6/97

PG. 1 OF 3

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
1		7					CONCRETE
2	SS-1	7 6 5	24	16	0.5		(FILL) DRY, MEDIUM DENSE, GRAY/BROWN MEDIUM SAND AND SILT, SOME COARSE SAND, SOME FINE GRAVEL
3		3					
4	SS-2	3 4 4	24	12	3.5		(FILL) SIMILAR TO SS-1
5		3					
6	SS-3	3 - -	24	8	0.5	AUGER REFUSAL DRILLED THROUGH 7 INCHES OF CONCRETE WITH FINGER BIT.	(FILL) SIMILAR TO SS-1
7		3					CONCRETE
8	SS-4	6 8 10	24	20	290		(FILL) MOIST, FIRM, GRAY SILT, SOME FINE TO COARSE SAND, TRACE FINE GRAVEL.
9		3			240	PETROLEUM ODOR	
10	SS-5	5 7 8	24	24	280		(LACUSTRINE) DAMP, STIFF GRAY SILT, LITTLE CLAY, TRACE MEDIUM SAND.
11		-					
12	SS-6	- -	24	0	-	BLOW COUNTS NOT RECORDED	NO RECOVERY
13		2					
14	SS-7	2	24	24	105		(LACUSTRINE) SIMILAR TO SS-5

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID,  
EQUIPPED WITH 10.2 eV LAMP.

RCD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE  
(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

===== CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

===== CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

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PROJECT/CLIENT <u>LUNDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____	
DRILLING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/7/97</u> / <u>8/7/97</u>		WELL NO. <u>M&amp;A-115</u>		
DATE FILE NO. <u>0311860001</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 2 OF 3		
QUAD. <u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u>	R. <u>12E</u>			DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>				FOREMAN <u>DENNIS</u>
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>DJS</u>		CHECKED BY <u>GCL</u>	DATE <u>10/6/97</u>	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
15		4					
		5					
		3					
16	SS-8	5	24	24	2.0		(LACUSTRINE) SIMILAR TO SS-5
		6					
		7					
17		1					
		2					
		4					
18	SS-9	6	24	24	11.0		(LACUSTRINE) SIMILAR TO SS-5
		6					
		12					
19		18					
		34					
		12					
20	SS-10	28	24	24	1.0		(LACUSTRINE) SIMILAR TO SS-5
		33					
		40					
21		3					
		11					
		24					
22	SS-11	24	24	24	0.5	SHALY CLEAVAGE & HORIZONTAL FRACTURING	(LACUSTRINE) DRY, DENSE, GRAY VERY FINE SAND.
		28					(LACUSTRINE) DAMP, HARD, GRAY SILT, SOME MEDIUM SAND, LITTLE CLAY.
		33					(LACUSTRINE) DRY, VERY DENSE, GRAY VERY FINE SAND AND SILT, LITTLE FINE TO MEDIUM GRAVEL.
23		40					
		3					
		11					
24	SS-12	24	24	24	320		(LACUSTRINE) DAMP, STIFF, GRAY SILT, SOME VERY FINE SAND.
		20					
		16					
25		21				WET	
		27					
		30					
26	SS-13	8	24	24	310		(LACUSTRINE) DAMP, HARD, GRAY SILT, SOME VERY FINE SAND, TRACE FINE TO MEDIUM GRAVEL.
		13					
		13					
27		8					
		13					
		13					
28	SS-14	8	24	24	2.5	0.5-INCH VEIN DRY MEDIUM SAND AT 27 FEET	(LACUSTRINE) DRY, MEDIUM DENSE, GRAY VERY FINE SAND, SOME SILT.
		13					
		13					

<p>BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER</p> <p>PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL</p> <p>REC=RECOVERY LENGTH OF SAMPLE</p> <p>SS=SPLIT SPOON SAMPLE</p> <p>S=SAMPLE TAKEN OFF AUGER</p> <p>HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.</p>	<p>RCD=LENGTH OF SOUND CORES &gt;4 IN./LENGTH CORED, %</p> <p>DEPTH=DEPTH BELOW GROUND SURFACE (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)</p> <p>WATER TABLE (APPROX)</p> <p>CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)</p> <p>CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)</p>
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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	87024.82	BORING NO.	
DIGGING LOCATION	SEE SITE PLAN	DATE START/FINISH	8/7/97 / 8/7/97			WELL NO.	M&A-115
SITE FILE NO.	0311860001	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
QUADRANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER	PG. 3 OF 3
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	DJS	CHECKED BY	GGL	DATE	10/6/97

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
29	SS-15	14					
		15					
		18					
		21					(OUTWASH) DRY/DAMP, DENSE, BLACK/WHITE COARSE SAND, TRACE SILT.
30	SS-15	23	24	24	0.0		
		26					
31		17				SHALY CLEAVAGE & HORIZONTAL FRACTURING	
		28					
32	SS-16	36	24	24	0.0		(LACUSTRINE) DRY, VERY DENSE, GRAY SILT AND VERY FINE SAND
		37					
33							
BOTTOM OF BORING AT 33 FEET. WELL INSTALLED AT 33 FEET.							
NOTES 1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT. 2. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCEMENT.							

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

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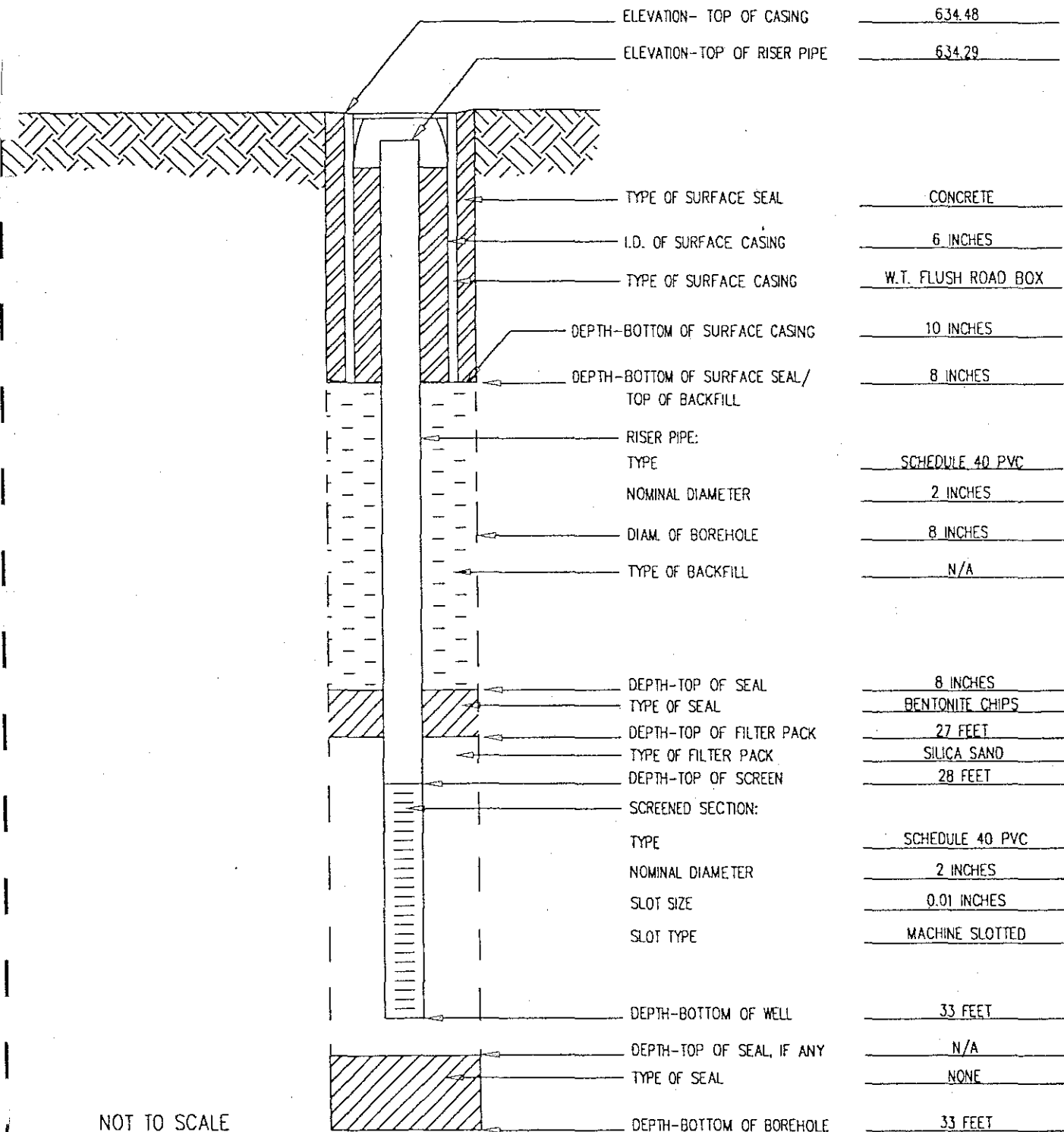
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## MONITORING WELL INSTALLATION DIAGRAM

PROJECT CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82  
 LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK II  
 CONTRACTOR D&G DRILLING DRILLER DENNIS  
 LOGGED BY DJS DATE 8/7/97  
 CHECKED BY GG DATE 10/6/97

M&A-115

LOCATION SEE SITE PLAN



# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

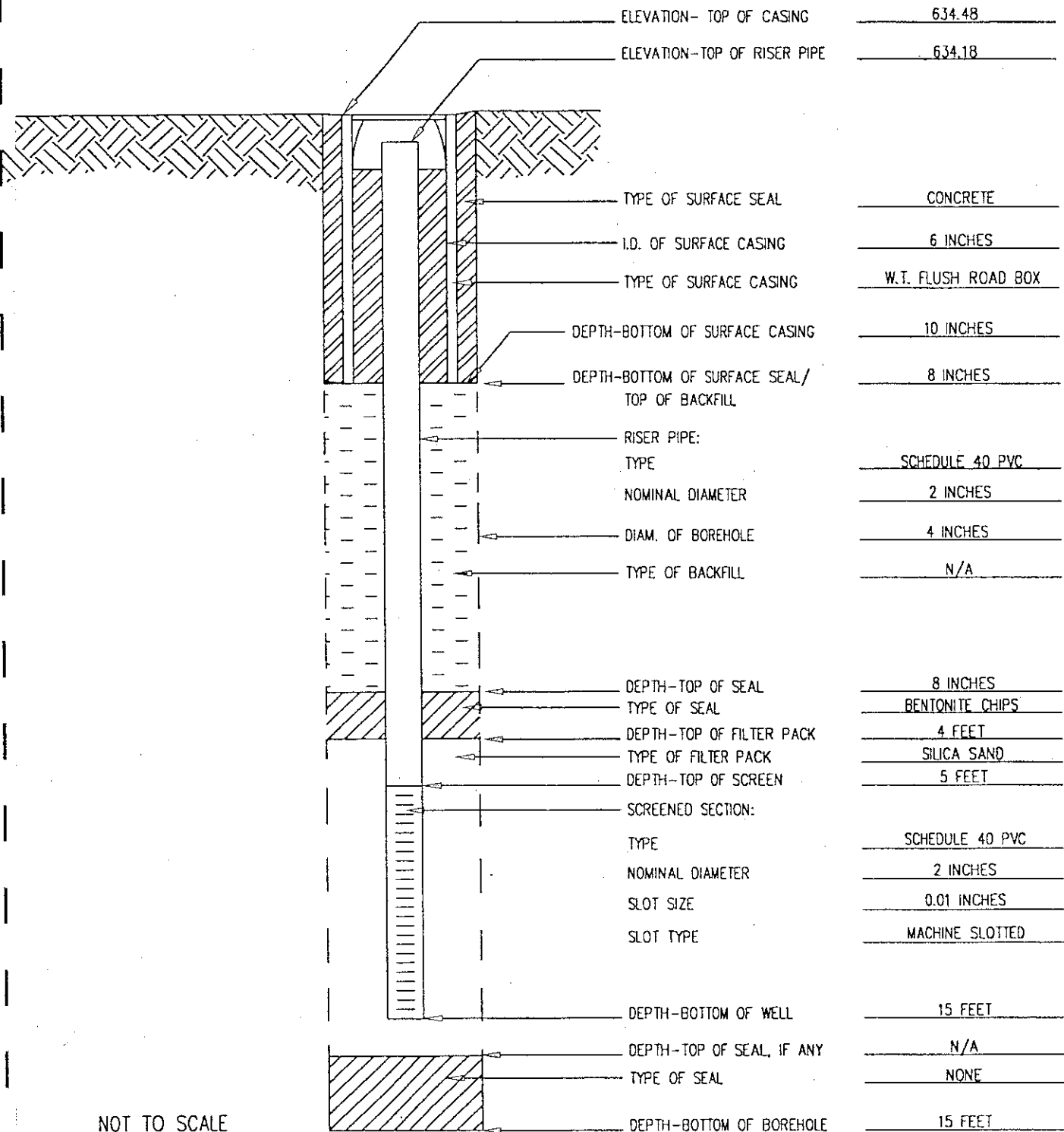
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## MONITORING WELL INSTALLATION DIAGRAM

PROJECT CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82  
LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK II  
CONTRACTOR D&G DRILLING DRILLER DENNIS  
LOGGED BY DJS DATE 8/6/97  
CHECKED BY GG DATE 10/6/97

M&A-116

LOCATION SEE SITE PLAN, REFER TO  
BORING LOG M&A-117



NOT TO SCALE



# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	87024.82	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	8/6/97 / 8/6/97	WELL NO.	M&A-117	PG. 1 OF 3	
SITE NO.	0311860001	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
QUADRANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER	
ROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	DJS	CHECKED BY	GGL	DATE 10/6/97	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
							CONCRETE
1		5				(FILL)	DRY, MEDIUM DENSE, BROWN FINE SAND, TRACE MEDIUM SAND.
2	SS-1	5	24	18	1.0		
		6				(LACUSTRINE)	DAMP, STIFF, BROWN SILT, TRACE CLAY.
3		7					
		8					
4	SS-2	11	24	18	3.0		
		7				(LACUSTRINE)	DAMP, STIFF, BROWN SILT, LITTLE MEDIUM GRAVEL, TRACE CLAY.
5		5					
		3					
6	SS-3	3	24	12	5.5		
		6				(LACUSTRINE)	DAMP, STIFF, GRAY/BROWN SILT, LITTLE FINE GRAVEL, LITTLE CLAY, TRACE MEDIUM SAND.
7		7					
		4					
8	SS-4	5	24	6	2.5		
		7				(LACUSTRINE)	MOIST, SIMILAR TO SS-3
9		7					
		3					
10	SS-5	6	24	3	0.5		
		9				(OUTWASH)	MOIST, VERY STIFF, GRAY SILT, SOME MEDIUM TO COARSE SAND, SOME CLAY.
11		9					
		10					
12	SS-6	13	24	24	0.0		
		14				(LACUSTRINE)	MOIST, VERY STIFF, GRAY SILT AND CLAY, TRACE FINE GRAVEL, TRACE COARSE SAND.
13		15					
		2					
14	SS-7	4	24	.05	0.5		
						(LACUSTRINE)	MOIST, STIFF, GRAY SILT AND FINE SAND.

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE  
(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

===== CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

===== CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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PROJECT/CLIENT <u>LINDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____	
BORING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/6/97</u> / <u>8/6/97</u>		WELL NO. <u>M&amp;A-117</u>		
SITE NO. <u>0311860001</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 2 OF 3		
QUADRANGLE <u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u>	R. <u>12E</u>			DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>
ROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>				FOREMAN <u>DENNIS</u>
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>DJS</u>		CHECKED BY <u>GCL</u>	DATE <u>10/6/97</u>	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
15		5					
		7					
		10					
16	SS-8	12	24	24	0.0		(LACUSTRINE) MOIST, VERY STIFF, GRAY SILT AND CLAY, TRACE COARSE SAND.
		12					
		14					
17		3					
		4					
18	SS-9	4	24	16	0.0		(LACUSTRINE) SIMILAR TO SS-8
		4					
		5					
19		5					
		6					
20	SS-10	7	24	24	0.0	0.5" DRY WHITE COARSE SAND VEIN	(LACUSTRINE) SIMILAR TO SS-8
		12					
21		6					
		7					
22	SS-11	17	24	21	0.0	THE GRAY FINE SANDS EXHIBIT SHALY CLEAVAGE & HORIZONTAL FRACTURING	(LACUSTRINE) DRY, DENSE, GRAY FINE SAND, TRACE MEDIUM SAND, TRACE FINE GRAVEL.
		15					
23		9					
		18					
24	SS-12	13	24	12	0.0		(LACUSTRINE) DRY, HARD, GRAY SILT, TRACE FINE SAND, TRACE FINE GRAVEL.
		24					
25		9					
		14					
26	SS-13	15	24	20	0.0	3" VEIN OF WET GRAY FINE SAND AT 25.5 FEET	(LACUSTRINE) MOIST, HARD, GRAY SILT, TRACE FINE SAND, TRACE CLAY.
		15					
27		8					
		16					
28	SS-14	16	24	22	0.0	3" VEIN OF WET GRAY SILT AT 27.5 FEET	(LACUSTRINE) MOIST, VERY STIFF, GRAY SILT AND VERY FINE SAND, TRACE FINE TO MEDIUM GRAVEL.

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE  
(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

===== CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

===== CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

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Environmental Consultants & Engineers

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PROJECT/CLIENT <u>LINDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____
DRILLING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/6/97</u> / <u>8/6/97</u>		WELL NO. <u>M&amp;A-117</u>	
SITE NO. <u>0311860001</u>		COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 3 OF 3
TAD RANGLE <u>RIVER FOREST, IL</u>		SECTION <u>33.2b</u>	T. <u>40N</u> R. <u>12E</u> DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>		
ROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>		FOREMAN <u>DENNIS</u>	
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>DJS</u>		CHECKED BY <u>GGL</u>	DATE <u>10/6/97</u>

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
29	SS-15	14					
		12					
		12					
30	SS-15	13	24	24	0.5	1-INCH FINE SAND VEIN AT 30.5 FEET	(LACUSTRINE) SIMILAR TO SS-14
		12					
		21					
31	SS-16	34				1-INCH GRAY MEDIUM SAND VEIN AT 31.1 FEET	(LACUSTRINE) DAMP, GRAY SILT, TRACE CLAY.
		45	24	24	0.0		
		46					
32	SS-16	34				0.5-INCH BLACK/WHITE MEDIUM TO COARSE SAND VEIN AT 31.5 FEET.	(LACUSTRINE) DRY, DENSE, GRAY VERY FINE SAND.
		15					
		20	24	24	0.0		
33	SS-17	21				THE GRAY FINE SANDS FROM 31.5 TO 35 FEET EXHIBIT SHALY CLEAVAGED HORIZONTAL FRACTURING	(LACUSTRINE) DRY, DENSE, GRAY VERY FINE SAND.
		18					
		9					
34	SS-18	10	24	24	0.0		(LACUSTRINE) DRY, VERY STIFF, GRAY SILT, TRACE COARSE SAND, TRACE FINE SAND.
		12					
		16					
35	SS-18						
36	SS-18						
37	SS-18						

NOTES

1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT.
1. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCEMENT.

LOW "R 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER  
 PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC=RECOVERY LENGTH OF SAMPLE  
 SS=SPLIT SPOON SAMPLE  
 S=SAMPLE TAKEN OFF AUGER  
 HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE  
 (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)  
 — CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

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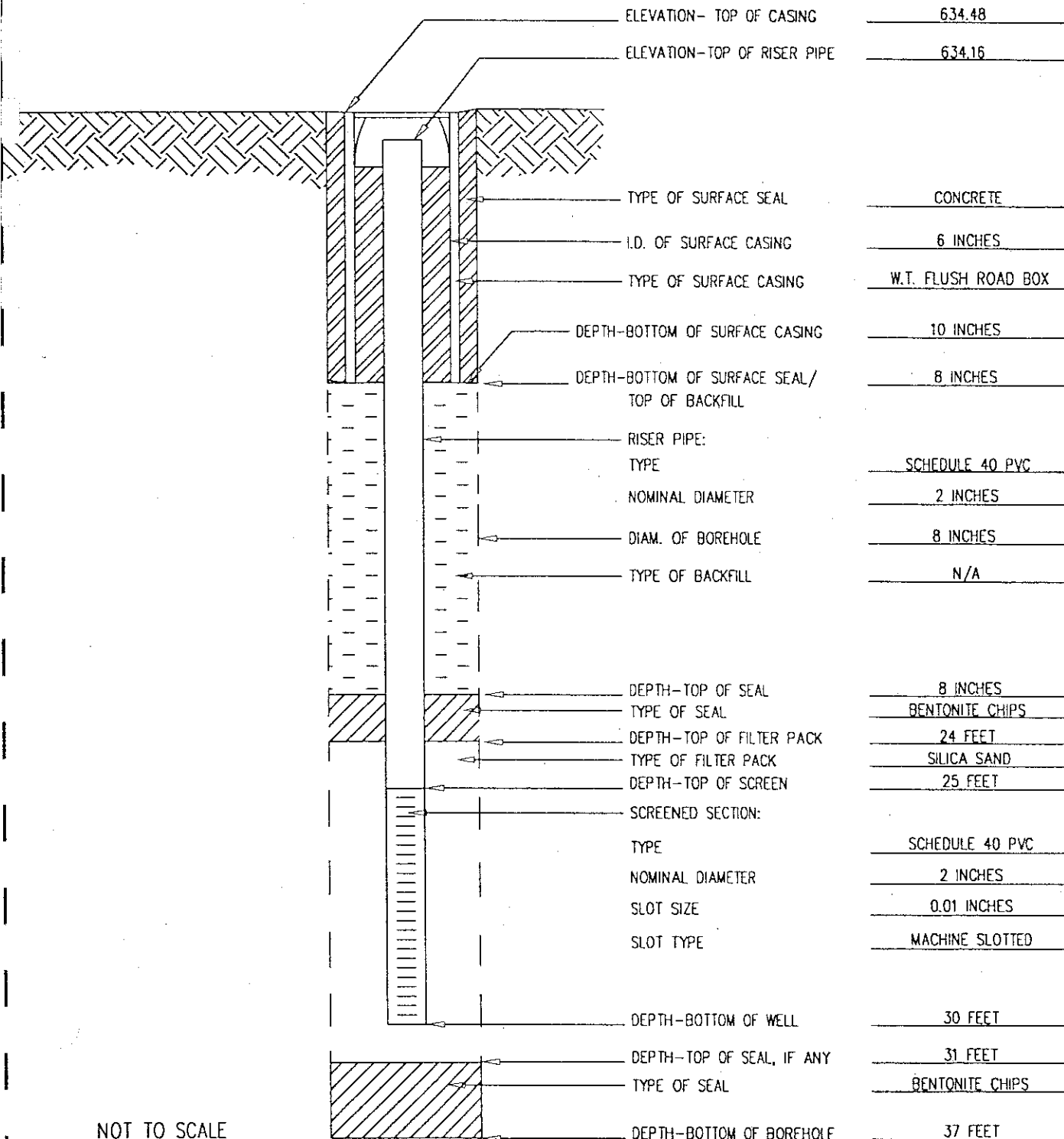
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## MONITORING WELL INSTALLATION DIAGRAM

PROJECT CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82  
 LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK II  
 CONTRACTOR D&G DRILLING DRILLER DENNIS  
 LOGGED BY DJS DATE 8/6/97  
 CHECKED BY GCI DATE 10/6/97

M&A-117

LOCATION SEE SITE PLAN



NOT TO SCALE

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## MONITORING WELL INSTALLATION DIAGRAM

PROJECT CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82

LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK II

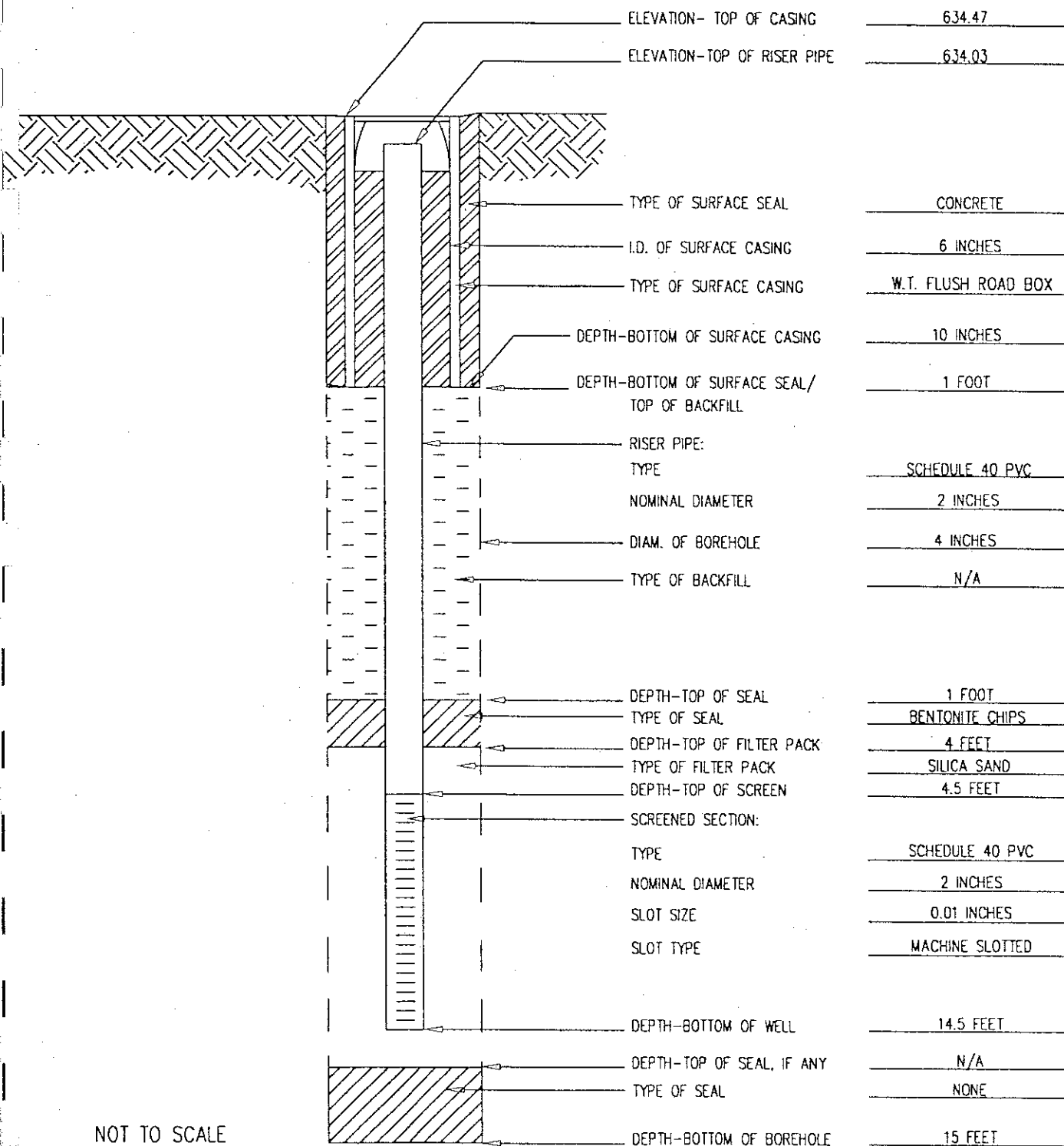
CONTRACTOR D&G DRILLING DRILLER BOB

LOGGED BY GGL DATE 8/6/97

CHECKED BY DJS DATE 10/6/97

M&A-118

LOCATION SEE SITE PLAN, REFER TO  
BORING LOG M&A-118



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PROJECT/CLIENT <u>LINDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____	
RING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/6/97</u> / <u>8/6/97</u>		WELL NO. <u>M&amp;A-119</u>		
SITE P. NO. <u>0311860001</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 1 OF 3		
QUADRANGLE <u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u>	R. <u>12E</u>			DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>				FOREMAN <u>BOB</u>
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>GGL</u>		CHECKED BY <u>DJS</u>	DATE <u>10/6/97</u>	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
1		5					CONCRETE
2	SS-1	30	24	16	2.5	NO ODOR	(FILL) DRY, VERY DENSE, BLACK/BROWN MEDIUM SAND, LITTLE FINE TO MEDIUM GRAVEL, LITTLE SILT, TRACE SLAG/CINDER.
3		17					
4	SS-2	10	24	16	1.0	PETROLEUM ODOR SMALL PETROLEUM GLOBULES IN FRACTURES	(LACUSTRINE) DAMP, STIFF, GRAY SILT, LITTLE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND, TRACE CLAY.
5		2					
6	SS-3	3	24	20	0.5	TAN MOTTLING SLIGHT PETROLEUM ODOR	(LACUSTRINE) DAMP, FIRM, LIGHT GRAY SILT, SOME CLAY, LITTLE FINE GRAVEL, TRACE COARSE SAND, TRACE MEDIUM GRAVEL.
7		4					
8	SS-4	5	24	15	0.0		(LACUSTRINE) DAMP, VERY STIFF, TAN SILT, LITTLE FINE TO MEDIUM GRAVEL, LITTLE CLAY, TRACE COARSE SAND.
9		9				NO ODOR	
10	SS-5	13	24	24	0.0		(LACUSTRINE) DAMP, VERY STIFF, LIGHT GRAY SILT, LITTLE FINE TO MEDIUM GRAVEL, LITTLE CLAY, TRACE COARSE SAND.
11		10					
12	SS-6	13	24	3	0.0		
13		4				NO ODOR	
14	SS-7	7	24	24	0.5	SLIGHT UNDETERMINED ODOR	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, SOME CLAY, LITTLE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND.

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID,  
EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	87024.82	BORING NO.	
RING LOCATION	SEE SITE PLAN	DATE START/FINISH	8/6/97 / 8/6/97	WELL NO.	M&A-119	PG. 2 OF 3	
SITE #	NO. 0311860001	COUNTY	COOK	FEDERAL ID. NO.	10L005071808		
QUADRANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N	R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	808		
GROUNDWATER EL./DEPTH		LOGGED BY	GGL	CHECKED BY	DJS	DATE	10/6/97

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
15	SS-8	8					
		11					
		4					
		7					
16	SS-9	24	14		0.0	SLIGHT UNDETERMINED ODOR	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT AND CLAY, LITTLE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL.
		9					
		11					
		3					
18	SS-10	3	24	24	0.0	NO ODOR	(LACUSTRINE) DAMP, STIFF, GRAY SILT AND CLAY, LITTLE COARSE SAND, TRACE FINE GRAVEL.
		5					
		8					
		4					
20	SS-11	8	24	24	0.0		
		17					
		35					
		23					
22	SS-12	57	24	20	0.0	NO ODOR SHALY CLEAVAGE & HORIZONTAL FRACTURING FOR ENTIRE FINE SAND STRATUM	(LACUSTRINE) DAMP, VERY DENSE, GRAY VERY FINE SAND AND SILT, TRACE COARSE SAND.
		78					
		77					
		12					
24	SS-13	18	24	24	0.0	NO ODOR	(LACUSTRINE) DAMP/DRY, VERY DENSE, GRAY FINE SAND, TRACE COARSE SAND.
		26					
		32					
		10					
26	SS-14	15	24	22	0.0	NO ODOR 1" FINE SAND VEIN AT ~26.8 FEET	(LACUSTRINE) DAMP/DRY, DENSE, GRAY VERY FINE SAND AND SILT, TRACE COARSE SAND.
		16					
		18					
		11					
28		18	24	24	0.0	NO ODOR	(LACUSTRINE) DRY, DENSE, GRAY VERY FINE SAND AND TRACE COARSE SAND.

OWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID,  
EQUIPPED WITH 10.2 eV LAMP.

ROD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

===== CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

===== CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

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PROJECT/CLIENT	LUNDBERG HEAT TREATING COMPANY		LOCATION	MELROSE PARK, IL	PROJ. NO.	87024.82	BORING NO.	
DRIING LOCATION	SEE SITE PLAN		DATE START/FINISH	8/6/97	/	8/6/97	WELL NO.	M&A-119
SITE F NO.	0311860001	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		PG. 3 OF 3	
QUAD.	RIVER FOREST, IL	SECTION	33.2b	T. 40N	R. 12E	DRILLING EQUIPMENT		4 1/4" ID HOLLOW STEM AUGER
GROUND ELEVATION (NGVD)			CONTRACTOR	D&G DRILLING, INC.		FOREMAN	BOB	
GROUNDWATER EL./DEPTH			LOGGED BY	GGL	CHECKED BY	DJS	DATE 10/6/97	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS		
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM				
29	SS-15	20	24	20		NO ODOR DIAGONAL FRACTURING	(LACUSTRINE) DRY, VERY STIFF, DARK GRAY SILT, TRACE FINE GRAVEL, TRACE COARSE SAND, TRACE CLAY.		
		23							
30		10			0.0	BLACK FINE SAND BANDING	(OUTWASH) WET, MEDIUM DENSE, GRAY FINE SAND, TRACE COARSE SAND.		
		18							
31	SS-16	15	24	20	0.0	NO ODOR FLOWING SAND JAMMED AUGER, RE-DRILLED 30-34 FEET TO SET WELL.	(OUTWASH) WET, MEDIUM DENSE, WHITE/BLACK COARSE SAND, LITTLE FINE TO MEDIUM GRAVEL, TRACE SILT.		
		16							
32		6			0.0				
		10							
33	SS-17	20	24	12	0.0	NO ODOR	(TILL) WET, DENSE, GRAY COARSE SAND AND FINE TO MEDIUM GRAVEL, SOME SILT, LITTLE CLAY.		
		21							
34		7			0.0				
		19							
35	22					BOTTOM OF BORING AT 35 FEET. WELL INSTALLED AT 34 FEET.			
	18								
NOTES							1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT. 2. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCEMENT.		

"BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.  
 SPLIT SPOON SAMPLER  
 PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC=RECOVERY LENGTH OF SAMPLE  
 SS=SPLIT SPOON SAMPLE  
 S=SAMPLE TAKEN OFF AUGER  
 HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID,  
 EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED.%

DEPTH=DEPTH BELOW GROUND SURFACE  
 (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

 WATER TABLE (APPROX)

 CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

 CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)



# Mabbett & Associates, Inc.

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## MONITORING WELL INSTALLATION DIAGRAM

M&A-119

PROJ. CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82

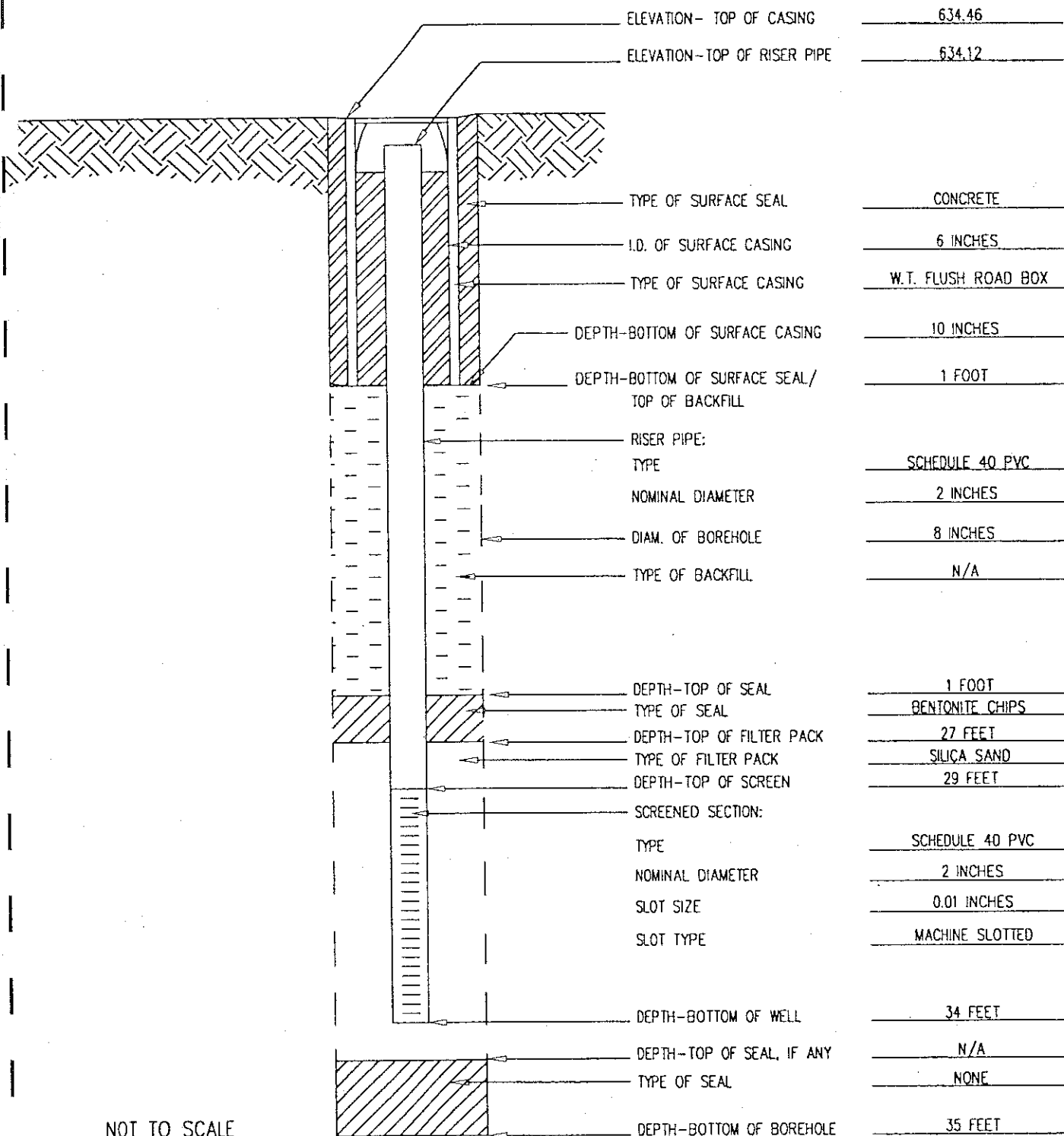
LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK II

CONTRACTOR D&G DRILLING DRILLER BOB

LOGGED BY GCL DATE 8/6/97

CHECKED BY DJS DATE 10/6/97

LOCATION SEE SITE PLAN



# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

Five Alfred Circle, Bedford, Massachusetts 01730 • (617) 275-6050 • Fax: (617) 275-5651

PROJECT/CLIENT <u>LINDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>	PROJ. NO. <u>87024.82</u>	BORING NO. _____
BORING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/5/97</u> / <u>8/5/97</u>	WELL NO. <u>M&amp;A-120</u>	
SITE NO. <u>0311860001</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>ID005071808</u>	PG. 1 OF 2	
QUADRANGLE <u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u> R. <u>12E</u>		
GROUND ELEVATION (NGVD) _____	CONTRACTOR <u>D&amp;G DRILLING, INC.</u>	FOREMAN <u>DENNIS</u>		
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>DJS</u>	CHECKED BY <u>GGL</u>	DATE <u>10/6/97</u>

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
1		4					CONCRETE
2	SS-1	2	24	15	1.0		(FILL) DAMP, LOOSE, RED/BROWN MEDIUM SAND.
3		3					(LACUSTRINE) DAMP, FIRM, BROWN/BLACK SILT, SOME CLAY.
4	SS-2	2	24	22	0.5	COLOR VARIATION BROWN/BLACK TO GRAY TO MOTTLED	(LACUSTRINE) DAMP, FIRM, GRAY SILT, SOME CLAY.
5		1					
6	SS-3	1	24	20	3.5		(LACUSTRINE) DAMP, FIRM, RED/GRAY SILT, SOME CLAY.
7		2					
8	SS-4	3	24	18	5.0		(OUTWASH) WET, LOOSE, GRAY MEDIUM SAND, SOME SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.
9		3					
10	SS-5	6	24	24	0.5		(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, LITTLE CLAY, TRACE MEDIUM SAND.
11		10					
12	SS-6	2	24	21	0.0		(LACUSTRINE) SIMILAR TO SS-5 BOTTOM.
13		5					
14	SS-7	7	24	24	0.5		(LACUSTRINE) DAMP, STIFF, GRAY SILT, LITTLE CLAY, TRACE MEDIUM SAND, TRACE FINE GRAVEL.

LOW "R 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID,  
EQUIPPED WITH 102 gV I AMP

RCD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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PROJECT/CLIENT <u>LUNDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____
BORING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/5/97</u> / <u>8/5/97</u>		WELL NO. <u>M&amp;A-120</u>	
FILE NO. <u>0311860001</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 2 OF 2	
QUADRANT <u>E</u>	<u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u> R. <u>12E</u>	DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>	
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>		FOREMAN <u>DENNIS</u>	
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>DJS</u>		CHECKED BY <u>GGL</u> DATE <u>10/6/97</u>	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
15		5 7					
BOTTOM OF BORING AT 15 FEET. WELL INSTALLED AT 15 FEET.							
NOTES: 1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT.  3. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCMENT.							

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

I=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

SM=MACRO CORE SOIL SAMPLE

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID,  
EQUIPPED WITH 10.2 eV LAMP.

ROD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE  
(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

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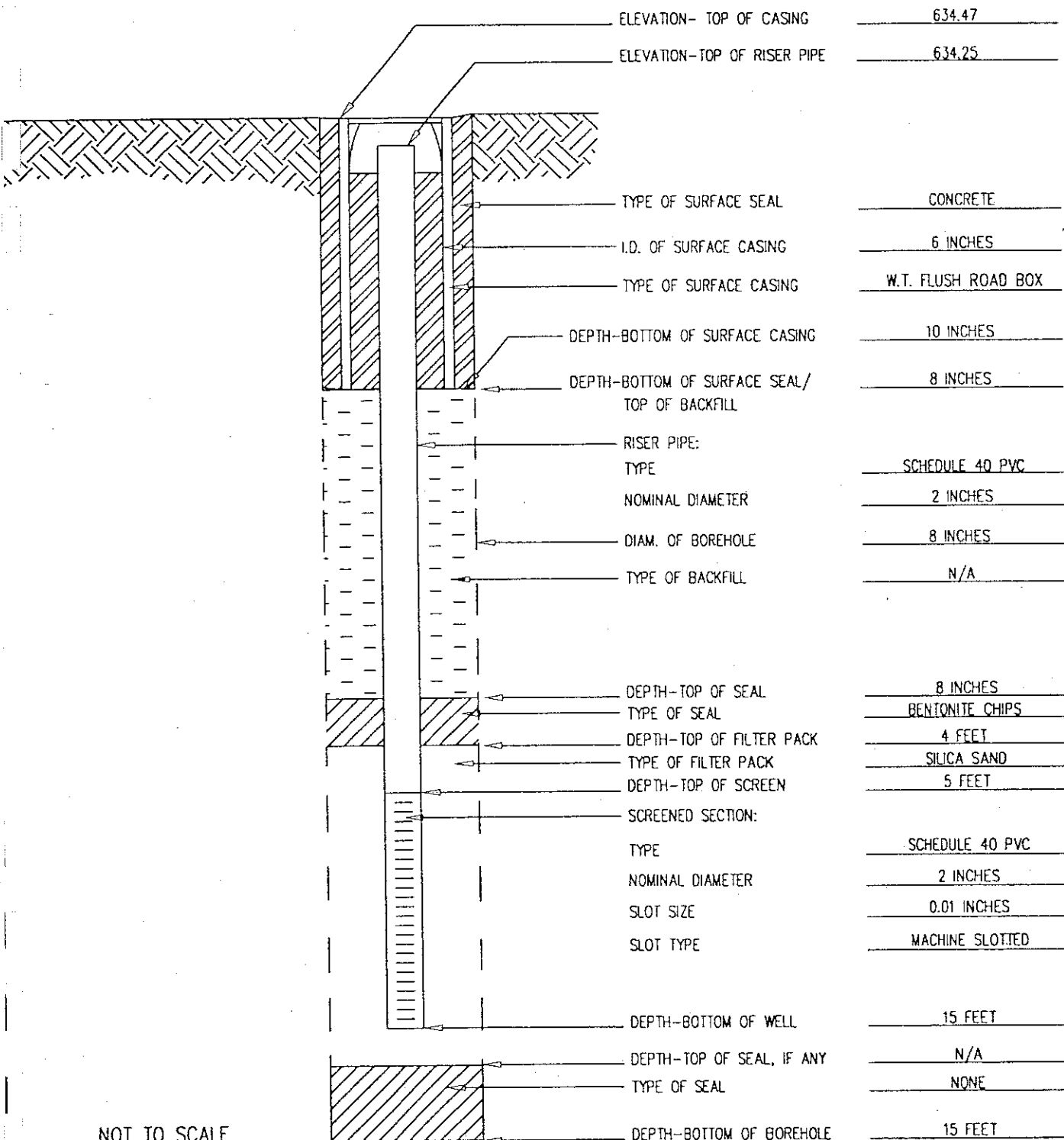
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## MONITORING WELL INSTALLATION DIAGRAM

M&A-120

PROJECT/CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82  
 LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK II  
 CONTRACTOR D&G DRILLING DRILLER DENNIS  
 LOGGED BY DJS DATE 8/5/97  
 CHECKED BY GCI DATE 10/6/97

LOCATION SEE SITE PLAN



NOT TO SCALE

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PROJECT/CLIENT LUNDBERG HEAT TREATING COMPANY LOCATION MELROSE PARK, IL PROJ. 5651  
 BORING LOCATION SEE SITE PLAN DATE START/FINISH 8/5/97 /  
 SITE NO. 0311860001 COUNTY COOK FEDERAL ID. NO. IDL005071808 NO. 87024.82  
QUADRANGLE RIVER FOREST, IL SECTION 33.2b T. 40N R. 12E DRILLING EQUIPMENT 4 1/4" ID HOLLOW STE 8/5/97  
 BORE HOLE ELEVATION (NGVD) \_\_\_\_\_ CONTRACTOR D&G DRILLING, INC. FOREMAN JIM AUGER  
 GROUNDWATER EL./DEPTH \_\_\_\_\_ LOGGED BY DJS CHECKED BY GGL DATE 10/6/97

BORING NO. \_\_\_\_\_  
 WELL NO. M&A-12  
 PG. 1 OF 3

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
1		3					(FILL) DRY, LOOSE, LIGHT BROWN MEDIUM SAND, SOME COARSE SAND, TRACE CLAY.
2	SS-1	3	24	24	3.5		(LACUSTRINE) DAMP, FIRM, GRAY SILT.
3		3					(LACUSTRINE) DAMP, FIRM, GRAY SILT.
4	SS-2	4	24	14	0.5		(LACUSTRINE) DAMP, FIRM, GRAY SILT, LITTLE MEDIUM GRAVEL.
5		1				1/2-INCH FINE SAND VEIN AT 5.5 FEET	(LACUSTRINE) DAMP, FIRM, GRAY SILT, LITTLE COARSE SAND.
6	SS-3	2	24	20	0.5	PETROLEUM ODOR AND STAINED SOIL 6.5 TO 7 FEET	(LACUSTRINE) DAMP, FIRM, GRAY SILT, LITTLE COARSE SAND.
7		1					(OUTWASH) WET, LOOSE, GRAY COARSE SAND, SOME SILT, SOME MEDIUM GRAVEL.
8	SS-4	4	24	18	1.5		(LACUSTRINE) MOIST, STIFF, GRAY SILT AND CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
9		1				SLIGHT PETROLEUM ODOR	(LACUSTRINE) SIMILAR TO SS-5 BOTTOM.
10	SS-5	6	24	22	14.0		(LACUSTRINE) SIMILAR TO SS-5 BOTTOM.
11		8					
12	SS-6	10	24	20	1.5		
13		11					
14	SS-7	3	24	22	0.5		

LOW "3 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

ROD=LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED, %  
 DEPTH=DEPTH BELOW GROUND SURFACE  
 (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

WATER TABLE (APPROX)

CHANGE IN MATERIAL TYPE (DASHED LINE)  
 CHANGE IN DEPOSIT TYPE (DOTTED LINE)

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	87024.82	BORING NO.	
DRILLING LOCATION	SEE SITE PLAN	DATE START/FINISH	8/5/97 / 8/5/97	WELL NO.	M&A-121	PG. 2 OF 3	
SITE NO.	0311860001	COUNTY	COOK	FEDERAL ID. NO.	10L005071808		
QUADRANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER	
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	DJS	CHECKED BY	GCL	DATE 10/6/97	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
15		5					
		7					
16	SS-8	4					
		5	24	20	0.5		(LACUSTRINE) SIMILAR TO SS-5 BOTTOM
		7					
17		8					
		2					
18	SS-9	3	24	20	0.0		(LACUSTRINE) SIMILAR TO SS-5 BOTTOM
		5					
19		7					
		3					
20	SS-10	6	24	20	0.0		(LACUSTRINE) SIMILAR TO SS-5 BOTTOM
		23					(LACUSTRINE) MOIST, DENSE, GRAY FINE SAND.
		29					(LACUSTRINE) DAMP, SIMILAR TO SS-5 BOTTOM
21		15					
		23	24	22	0.0		(LACUSTRINE) DAMP, DENSE, GRAY FINE SAND.
22	SS-11	25					
		16					
23		12					(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT AND CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
		13	24	20	0.0		(LACUSTRINE) DAMP, DENSE, GRAY VERY FINE SAND, TRACE FINE GRAVEL.
24	SS-12	20					
		23					(LACUSTRINE) MOIST, VERY STIFF, GRAY SILT AND CLAY.
25		13					
		18	24	22	0.0		(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, SOME VERY FINE SAND.
26	SS-13	22					
		17					(LACUSTRINE) WET, VERY STIFF, GRAY SILT AND CLAY, LITTLE MEDIUM GRAVEL.
27		11					
		13	24	24	0.5		(LACUSTRINE) DRY, GRAY VERY FINE SAND.
28	SS-14						

LOWE "R 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, FORIPPED WITH 10.2 eV LAMP

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY		LOCATION	MELROSE PARK, IL	PROJ. NO.	87024.82	BORING NO.	
BORING LOCATION	SEE SITE PLAN		DATE START/FINISH	8/5/97 / 8/5/97			WELL NO.	M&A-121
FILE NO.	0311860001	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808			
QUADRANT	E	RIVER FOREST, IL	SECTION	33.2b	T. 40N R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER	
GROUND ELEVATION (NGVD)			CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		PG. 3 OF 3
GROUNDWATER EL./DEPTH			LOGGED BY	DJS	CHECKED BY	GGL	DATE	10/6/97

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FEET	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
29		15					(LACUSTRINE) DAMP, HARD, GRAY SILT, LITTLE CLAY, TRACE COARSE SAND, TRACE MEDIUM SAND.
30	SS-15	17	24	24	0.0		(OUTWASH) DRY, DENSE, BLACK/ WHITE MEDIUM SAND, TRACE SILT.
31		12					
32	SS-16	15	24	24	0.0		(TILL) DAMP, VERY STIFF, GRAY SILT, SOME CLAY, LITTLE VERY FINE SAND, TRACE COARSE SAND.
33		18					
		22					
		7					
		8					
		14					
		15					
BOTTOM OF BORING AT 33 FEET. WELL INSTALLED AT 33 FEET.							
NOTES 1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT. 2. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCEMENT.							

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

P=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE  
(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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## MONITORING WELL INSTALLATION DIAGRAM

PROJECT/CLIENT LINDBERG HEAT TREATING COMPANY

PROJ. NO. 87024.82

M&A-121

LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK II

CONTRACTOR D&G DRILLING

DRILLER DENNIS

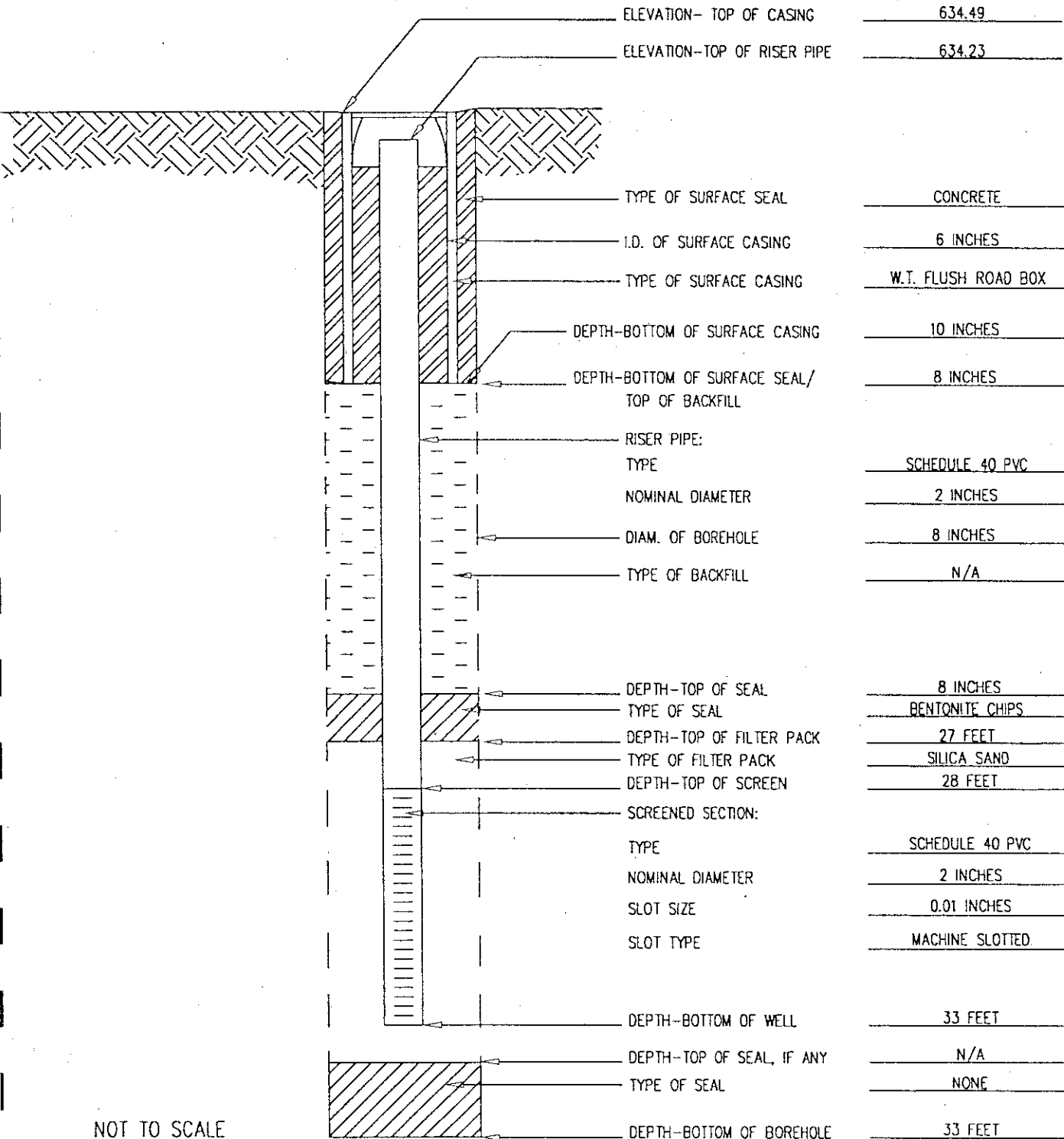
LOGGED BY DJS

DATE 8/5/97

LOCATION SEE SITE PLAN

CHECKED BY GG

DATE 10/6/97



NOT TO SCALE



# Mabbett & Associates, Inc.




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PROJECT/CUENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	87024.82	BORING NO.	
RING LOCATION	SEE SITE PLAN	DATE START/FINISH	8/7/97 / 8/7/97	WELL NO.	M&A-122		
SITE FILE NO.	0311860001	COUNTY	COOK	FEDERAL ID. NO.	10L005071808		
QUAD	RIVER FOREST, IL	SECTION	33.2b	T. 40N R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER	
GROUND ELEVATION (NGVD)		CONTRACTOR	O&G DRILLING, INC.	FOREMAN	JM		
GROUNDWATER EL./DEPTH		LOGGED BY	GCL	CHECKED BY	DJS	DATE 10/6/97	

PG.1 OF 3

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
1						HAND DUG TO DEPTH OF 3 FEET TO CLEAR POSSIBLE UTILITIES	TOP SOIL
2							(FILL) DAMP, BROWN MEDIUM SAND, SOME SILT, SOME CONCRETE RUBBLE, TRACE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND.
3		2					
4	SS-1	3	24	20	5.0	NO ODOR GRAY MOTTLING	(LACUSTRINE) MOIST, FIRM, TAN CLAY, SOME SILT, LITTLE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND.
5		3					
6		4					
7	SS-2	2				NO ODOR DIAGONAL FRACTURING	(LACUSTRINE) DAMP, STIFF, BROWN/GRAY SILT AND CLAY, LITTLE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND.
8		3	24	20	18.0		
9		7					
10	SS-3	8	24	16	0.5	NO ODOR	(LACUSTRINE) MOIST, VERY STIFF, GRAY SILT, SOME CLAY, LITTLE COARSE SAND, TRACE FINE GRAVEL.
11		9					
12		10					
13	SS-4	3	24	24	5.5	NO ODOR DIAGONAL FRACTURING AT 9'	(LACUSTRINE) MOIST, STIFF, GRAY CLAY, SOME SILT, LITTLE FINE GRAVEL, TRACE MEDIUM GRAVEL, TRACE COARSE SAND.
14		5					
15		8					
16	SS-5	6	24	24	0.0	NO ODOR DIAGONAL FRACTURING	(LACUSTRINE) MOIST/WET, VERY STIFF, GRAY CLAY, SOME SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.
17		8					
18		11					
19	SS-6	13	24	24	0.0	NO ODOR	(LACUSTRINE) SIMILAR TO SS-5
20		2					
21		3					

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC=RECOVERY LENGTH OF SAMPLE SS=SPLIT SPOON SAMPLE S=SAMPLE TAKEN OFF AUGER HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.	ROD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, % DEPTH=DEPTH BELOW GROUND SURFACE (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)  WATER TABLE (APPROX)  CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)  CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)
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# Mabbett & Associates, Inc.

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PROJECT/CLIENT <u>LUNDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____	
RING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/7/97</u> / <u>8/7/97</u>		WELL NO. <u>M&amp;A-122</u>		
SITE FILE NO. <u>0311860001</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>10L005071808</u>		PG. 2 OF 3		
QUADRANGLE <u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u>	R. <u>12E</u>			DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>				FOREMAN <u>JM</u>
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>GGL</u>		CHECKED BY <u>DJS</u>	DATE <u>10/6/97</u>	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
15		6					
		9					
16	SS-7	4					
		5	24	20	0.0	NO ODOR	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, SOME CLAY, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL.
		8					
17		9					
		5					
18	SS-8	9	24	24	0.0	NO ODOR	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, LITTLE CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
		15					
19		34					
		15				NO ODOR SHALY CLEAVAGE & HORIZONTAL FRACTURING FINE SAND STRATUM	
20	SS-9	25	24	20	0.0		(LACUSTRINE) DAMP/DRY, VERY DENSE, GRAY VERY FINE SAND, SOME SILT.
		37					
21		52					
		21					
22	SS-10	41	24	24	0.0	NO ODOR	(LACUSTRINE) SIMILAR TO SS-9
		55					
23		42					
		7					(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, SOME VERY FINE SAND, TRACE COARSE SAND, TRACE FINE GRAVEL.
24	SS-11	12	24	24	0.0	NO ODOR	
		16					
25		21					
		14					(LACUSTRINE) DAMP/DRY, DENSE, GRAY VERY FINE SAND SOME SILT.
26	SS-12	16	24	24	0.0	NO ODOR SHALY CLEAVAGE	
		15					
27		11				NO ODOR DIAGONAL FRACTURE WITH 1/32"	(LACUSTRINE) DAMP, VERY STILL, GRAY SILT, LITTLE CLAY, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL.
		9					
28	SS-13	9	24	20	0.0		

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID,  
EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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PROJECT/CLIENT <u>LINDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>87024.82</u>	BORING NO. _____	
RING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>8/6/97</u> / <u>8/6/97</u>		WELL NO. <u>M&amp;A-122</u>		
E FILE NO. <u>0311860001</u>		COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>10L005071808</u>		PG. 3 OF 3	
QUADRANT <u>E</u>	<u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u>	R. <u>12E</u>		DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>		FOREMAN <u>JIM</u>		
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>GGL</u>		CHECKED BY <u>DJS</u>	DATE <u>10/6/97</u>	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
29	SS-14	15				FINE SAND VEINS	
		20					
		23					
30	SS-14	25	24	24	0.0	NO ODOR SHALY CLEAVAGE & HORIZONTAL FRACTURING FINE SAND STRATUM	(LACUSTRINE) DAMP/DRY, VERY DENSE, GRAY VERY FINE SAND, SOME SILT.
		39					
		54					
31	SS-15	19					
		24	24	22	0.0		(LACUSTRINE) DAMP/DRY, DENSE, GRAY VERY FINE SAND, SOME SILT, TRACE COARSE SAND.
		18					
32	SS-16	13					
		8					
		12	24	22	0.0	NO ODOR	(TILL) DAMP/DRY, VERY STIFF, GRAY SILT, LITTLE CLAY, LITTLE COARSE SAND, LITTLE FINE GRAVEL, TRACE MEDIUM GRAVEL.
33	SS-16	13					
		7					
		9					
34	SS-17	9	24	22	0.0	NO ODOR	(TILL) SIMILAR TO SS-16
		9					
		13					
37							

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

N=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE  
(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

WATER TABLE (APPROX)

CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

BOTTOM OF BORING AT 37 FEET.  
WELL INSTALLED AT 33 FEET.

NOTES 1. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR  
SPLIT SPOON ADVANCEMENT.

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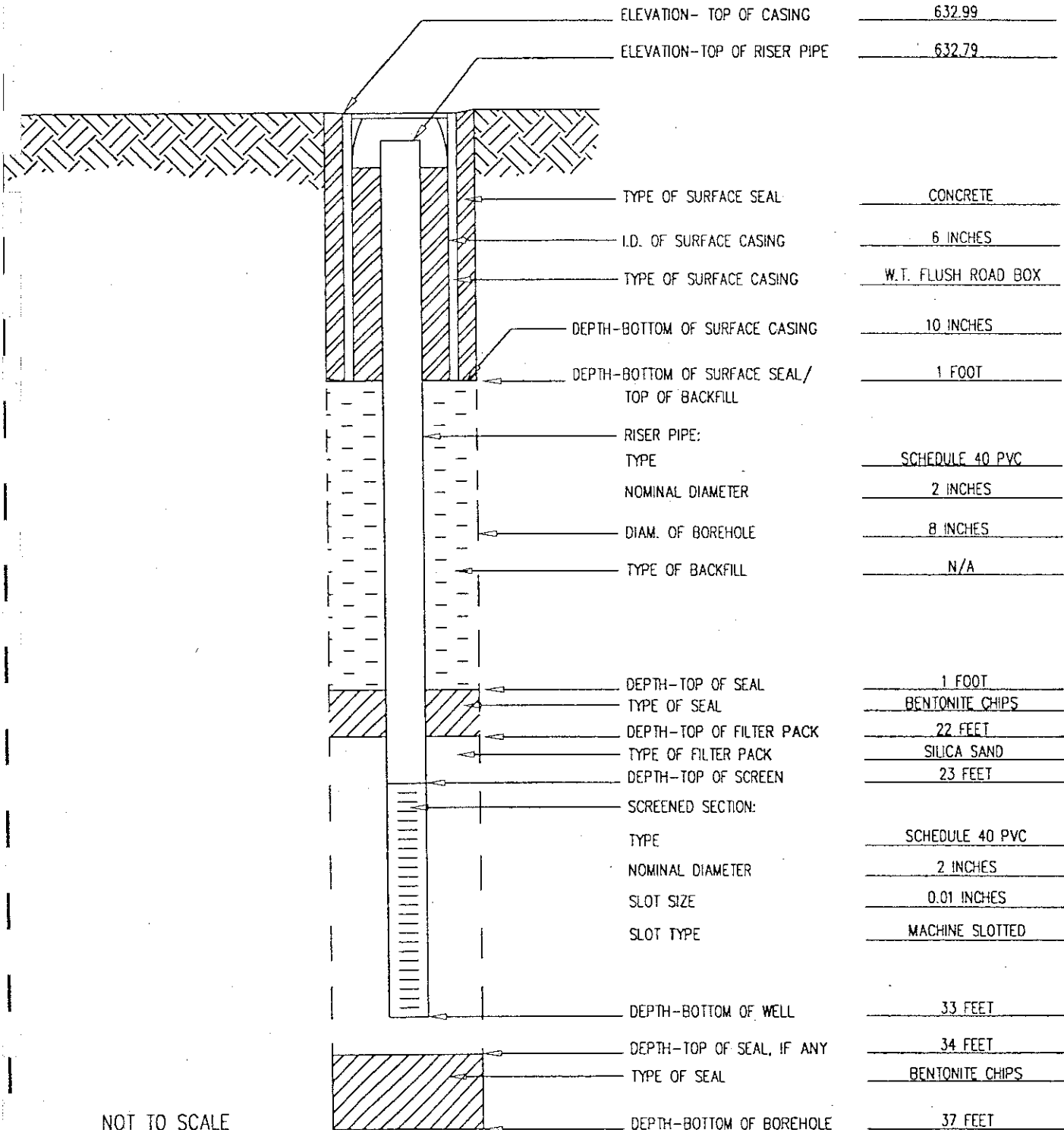
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## MONITORING WELL INSTALLATION DIAGRAM

M&A-122

PROJECT CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 87024.82  
 LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK II  
 CONTRACTOR D&G DRILLING DRILLER JIM  
 LOGGED BY GGL DATE 8/7/97  
 CHECKED BY DJS DATE 10/6/97

LOCATION SEE SITE PLAN



NOT TO SCALE

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	98002.15	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	6/23/98 / 6/24/98	WELL NO.	M&A-123	PG.1 OF 2	
SITE FILE NO.	0311860011	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
QUADRANGLE	RIVER FOREST, IL	SECTION	33.2b	T.	40N	R.	12E
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	GGL	CHECKED BY	ACF	DATE	9/22/98

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
0							
25		17				TRACE HORIZONTAL & DIAGONAL FRACTURE NO ODOR HIGHER SAND CONTENT 25-26 FEET	
26	SS-1	17	24	24	28.5		(LACUSTRINE) DRY/DAMP, HARD, GRAY SILT, SOME VERY FINE SAND, LITTLE FINE TO COARSE GRAVEL, TRACE CLAY, TRACE COARSE SAND.
27		13					
28	SS-2	15					
29		9					
30	SS-3	11	24	20	29.3		(LACUSTRINE) DRY/DAMP, VERY STIFF, GRAY SILT, LITTLE VERY FINE SAND, LITTLE CLAY, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL
31		12					
32	SS-4	12					
33		16					
34	SS-5	25	24	22	36.8	HORIZONTAL CLEAVAGE NO ODOR	(LACUSTRINE) DRY/DAMP, VERY DENSE, GRAY VERY FINE SAND, SOME SILT, TRACE COARSE SAND, TRACE FINE GRAVEL
35		36					
36	SS-6	42					
37		19					
		29	24	20	43.5		(LACUSTRINE) SIMILAR TO SS-3.
		23					
		13					
		6					
		9					
		12	24	24	1.6	LITTLE HORIZONTAL CLEAVAGE NO ODOR	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, LITTLE CLAY, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL
		16					
		7					
		11					
		14	24	22	3.5	NO ODOR	(TILL) DAMP, HARD, GRAY SILT, LITTLE CLAY, LITTLE FINE SAND, LITTLE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND.
		18					


P' S PER 6" =140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER  
 PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC=RECOVERY LENGTH OF SAMPLE  
 SS=SPLIT SPOON SAMPLE  
 S=SAMPLE TAKEN OFF AUGER  
 HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PHOTO  
 VAC 2020 BID. EQUIPPED WITH 10.6 A.V. LAMP

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED,%  
 DEPTH=DEPTH BELOW GROUND SURFACE  
 (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)  
 ≡ WATER TABLE (APPROX)  
 — CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)  
 - - - CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

## Environmental Consultants &amp; Engineers

PROJECT/CLIENT <u>LINDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>98002.15</u>	BORING NO. _____
BORING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>6/23/98 / 6/24/98</u>		WELL NO. <u>M&amp;A-123</u>	
SITE FILE NO. <u>0311860011</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 2 OF 2	
CORNER <u>RIVER FOREST, IL</u>	SECTION <u>33.2b</u>	T. <u>40N</u>	R. <u>12E</u>	DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>	
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>		FOREMAN <u>DENNIS</u>	
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>GGL</u>		CHECKED BY <u>ACF</u>	DATE <u>9/22/98</u>

BLANKS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.  
SPUT SPOON SAMPLER  
PEN= PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC= RECOVERY LENGTH OF SAMPLE  
SS= SPUT SPOON SAMPLE  
S= SAMPLE TAKEN OFF AUGER  
HEADSPACE= RESULT OF FIELD HEADSPACE SCREENING WITH PHOTO  
VAC 2020 PID, EQUIPPED WITH 10.6 eV LAMP

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED,%  
DEPTH=DEPTH BELOW GROUND SURFACE  
(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)  
 WATER TABLE (APPROX)  
\_\_\_\_\_  
CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)  
\_\_\_\_\_  
CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

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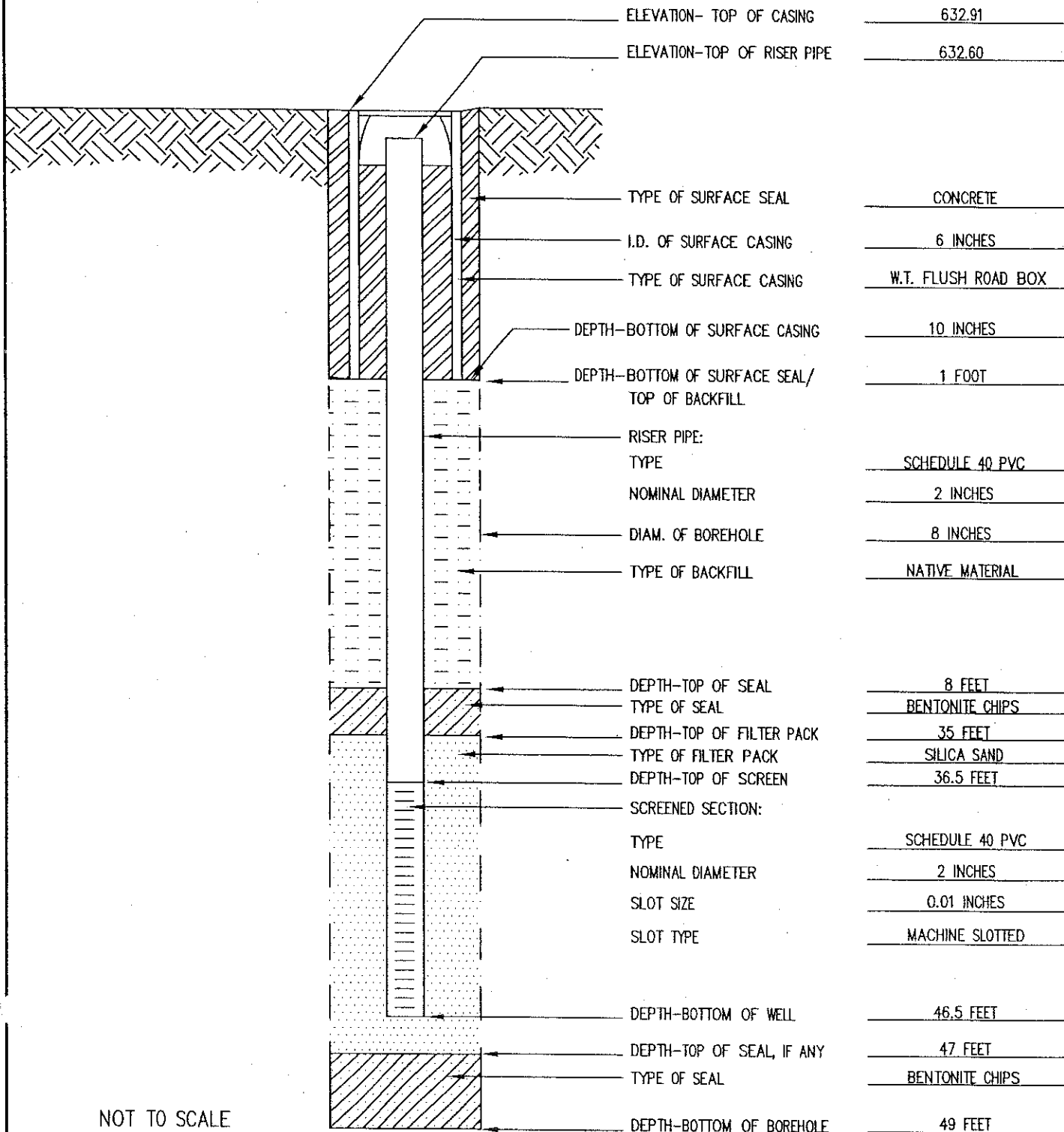
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## MONITORING WELL INSTALLATION DIAGRAM

M&A-123

PROJECT/CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 98002.15  
 LOCATION 1975 NORTH RUBY STREET, MELROSE PARK, IL  
 CONTRACTOR D&G DRILLING, INC. DRILLER DENNIS  
 LOGGED BY GGL DATE 6/24/98  
 CHECKED BY ACF DATE 9/22/98

LOCATION SEE SITE PLAN



NOT TO SCALE

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PROJECT/CLIENT <u>LINDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>	PROJ. NO. <u>98002.15</u>	BORING NO. _____
BORING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>6/25/98</u> / <u>6/25/98</u>	WELL NO. <u>M&amp;A-124</u>	
SITE FILE NO. <u>0311860011</u>	COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>	PG. 1 OF 2	
Q. <u>ANGLE RIVER FOREST, IL</u> SECTION <u>33.2b</u>		T. <u>40N</u> R. <u>12E</u>	DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>	
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>	FOREMAN <u>AL</u>	
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>MDH</u>	CHECKED BY <u>ACF</u>	DATE <u>9/22/98</u>

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
1		21					CONCRETE
2	SS-1	5	24	18	182		(FILL) DRY, MEDIUM DENSE, TAN SILT AND FINE SAND, LITTLE MEDIUM SAND, LITTLE FINE TO MEDIUM GRAVEL.
3		7					(LACUSTRINE) DRY, FIRM, BROWN/GRAY SILT, SOME CLAY, TRACE FINE GRAVEL.
4	SS-2	10	24	6	290	DIAGONAL FRACTURING NO STAINING NO ODOR	(LACUSTRINE) SIMILAR TO ABOVE.
5		3					
6	SS-3	4	24	14	247	SUBTLE DIAGONAL FRACTURING	(LACUSTRINE) DAMP, FIRM, LIGHT-BROWN/GRAY MOTTLED SILT AND CLAY, TRACE FINE GRAVEL.
7		5					
8	SS-4	4	24	6	162	OIL STAINING 7.3-7.4 FEET	(LACUSTRINE) SIMILAR TO SS-3.
9		7					
10	SS-5	10	24	20	165	NO FRACTURING NO ODOR NO STAINING	(LACUSTRINE) DAMP, STIFF, LIGHT-BROWN/GRAY MOTTLED SILT AND CLAY, LITTLE FINE GRAVEL.
11		10					
12	SS-6	7	24	24	320	NO ODOR NO STAINING	(LACUSTRINE) DAMP, STIFF, GRAY/LIGHT-BROWN MOTTLED SILT AND CLAY, TRACE COARSE SAND.
13		12					
14	SS-7	13	24	24	145	FEW FINE GRAVEL SEAMS	(LACUSTRINE) DAMP, STIFF, GRAY/LIGHT-BROWN MOTTLED SILT AND CLAY, LITTLE FINE GRAVEL.

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID,  
EQUIPPED WITH 10.6 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED,%

DEPTH=DEPTH BELOW GROUND SURFACE  
(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

===== CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

===== CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)



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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	98002.15	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	6/25/98 / 6/25/98	WELL NO.	M&A-124	PG. 2 OF 2	
SITE FILE NO.	0311860011	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
Q. ANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N	R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	AL		
GROUNDWATER EL./DEPTH		LOGGED BY	MDH	CHECKED BY	ACF	DATE	9/22/98

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
15		7					
		9					
		4					
16	SS-8	7	24	24	109	NO FRACTURING	(LACUSTRINE) SIMILAR TO SS-7.
		8					
		10					
17		4					
		6					
18	SS-9	8	24	24	78.5	NO ODOR NO STAINING	(LACUSTRINE) DAMP, FIRM, GRAY AND BROWN MOTTLED SILT AND CLAY, LITTLE FINE GRAVEL.
		8					
19		5					
		10					(LACUSTRINE) SIMILAR TO SS-9.
20	SS-10	35	24	24	89.2		(LACUSTRINE) DRY, DENSE, GRAY FINE SAND, TRACE FINE GRAVEL.
		43					
21							
BOTTOM OF BORING AT 21 FEET. WELL M&A-124 INSTALLED AT 15.5 FEET.							
NOTES 1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT. 2. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCEMENT.							

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.6 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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## MONITORING WELL INSTALLATION DIAGRAM

PROJECT/CLIENT LINDBERG HEAT TREATING COMPANY

PROJ. NO. 9800215

LOCATION 1975 NORTH RUBY ROAD, MELROSE PARK II

CONTRACTOR D&G DRILLING, INC.

DRILLER AL

LOGGED BY MDH

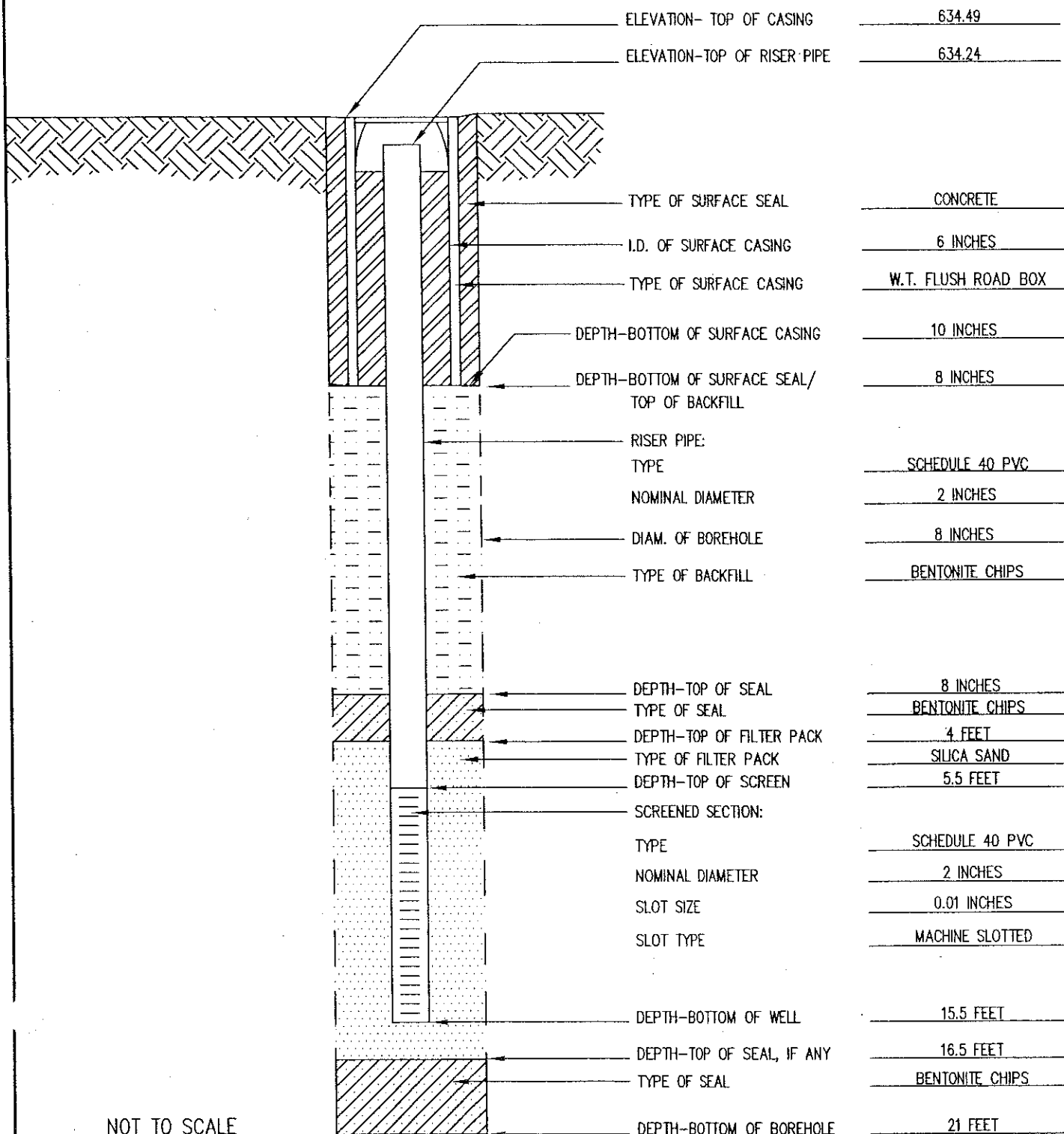
DATE 6/25/98

CHECKED BY ACF

DATE 9/22/98

M&A-124

LOCATION SEE SITE PLAN



NOT TO SCALE

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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PROJECT/CLIENT <u>LUNDBERG HEAT TREATING COMPANY</u>		LOCATION <u>MELROSE PARK, IL</u>		PROJ. NO. <u>98002.15</u>	BORING NO. _____	
BORING LOCATION <u>SEE SITE PLAN</u>		DATE START/FINISH <u>6/24/98</u> / <u>6/25/98</u>		WELL NO. <u>M&amp;A-125</u>		
SITE FILE NO. <u>0311860011</u>		COUNTY <u>COOK</u>	FEDERAL ID. NO. <u>IDL005071808</u>		PG. 1 OF 3	
Q. ANGLE <u>RIVER FOREST, IL</u>		SECTION <u>33.2b</u>	T. <u>40N</u>	R. <u>12E</u>		DRILLING EQUIPMENT <u>4 1/4" ID HOLLOW STEM AUGER</u>
GROUND ELEVATION (NGVD) _____		CONTRACTOR <u>D&amp;G DRILLING, INC.</u>		FOREMAN <u>DENNIS</u>		
GROUNDWATER EL./DEPTH _____		LOGGED BY <u>GGL</u>		CHECKED BY <u>ACF</u>	DATE <u>9/22/98</u>	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
0							COCONCRETE
8							NO SAMPLES 1 TO 8 FEET.
9	SS-1	1 3 7 10	24	18	878.0	TRACE DIAGONAL FRACTURE EARTHY ODOR	(LACUSTRINE) DAMP/MOIST, STIFF, OLIVE SILT, SOME CLAY, LITTLE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND.
11	SS-2	7 9 13	24	24	1,385.0	EARTHY ODOR	(LACUSTRINE) DAMP, VERY STIFF, GRAY/OLIVE SILT, SOME CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
13	SS-3	3 6 8 9	24	24	>2000	1/4" THICK WET DIAGONAL FRACTURE AT 13' FINE SAND IN FRACTURES EARTHY ODOR	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, SOME CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
14							NO SAMPLES 14 TO 25 FEET.
26	SS-4	13 19 21 18	24	24	82.7	LITTLE HORIZONTAL FRACTURING NO ODOR	(LACUSTRINE) DAMP/DRY, HARD, GRAY SILT, SOME VERY FINE SAND, TRACE COARSE SAND, TRACE FINE GRAVEL.
28	SS-5	10 11 14 18	24	22	78.1	SOME HORIZONTAL & DIAGONAL FRACTURING NO ODOR	(LACUSTRINE) DRY, HARD, GRAY SILT, LITTLE VERY FINE SAND, LITTLE FINE GRAVEL, TRACE COARSE SAND.
30	SS-6	9 21	24	24	81.9	HORIZONTAL FRACTURING	(LACUSTRINE) DRY, DENSE, GRAY VERY FINE SAND, LITTLE SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.  
SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PHOTO  
VAC 2020 PID. EQUIPPED WITH 10.6 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED,%

DEPTH=DEPTH BELOW GROUND SURFACE  
(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	98002.15	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	6/24/98 / 6/25/98	WELL NO.	M&A-125	PG. 2 OF 3	
SITE FILE NO.	0311860011	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
QCL	ANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	GGL	CHECKED BY	ACF	DATE	9/22/98

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
30		28				NO ODOR	
31		37					
		20					
32	SS-7	26	24	24	73.3	NO ODOR	(LACUSTRINE) SIMILAR TO SS-6 BOTTOM.
		31					
33		33					
		13					
34	SS-8	12	24	24	72.9	NO ODOR VERY DIFFICULT DRILLING	(LACUSTRINE) DRY, HARD, GRAY SILT, LITTLE FINE SAND, LITTLE FINE TO MEDIUM GRAVEL, TRACE CLAY, TRACE COARSE SAND.
		13					
35		16					
		4					
36	SS-9	8	24	22	106.0	NO ODOR	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, LITTLE FINE SAND, LITTLE FINE TO MEDIUM GRAVEL, TRACE CLAY, TRACE COARSE SAND.
		9					
37		11					
		6					
38	SS-10	9	24	22	39.1	NO ODOR	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, LITTLE CLAY, LITTLE FINE TO MEDIUM GRAVEL, TRACE VERY FINE SAND, TRACE COARSE SAND.
		12					
39		14					
		6					
40	SS-11	10	24	24	98.8	1" FINE SAND VEIN AT 40.75' TRACE DIAGONAL FRACTURING	(LACUSTRINE) DAMP, HARD, GRAY SILT, LITTLE CLAY, TRACE VERY FINE SAND, TRACE COARSE SAND, TRACE FINE GRAVEL.
		13					
41		20					
		7					
42	SS-12	9	24	24	166.0	TRACE HORIZONTAL FRACTURING NO ODOR	(LACUSTRINE) DAMP, DENSE, GRAY VERY FINE SAND, SOME SILT, TRACE COARSE SAND.
		22					
43		24					
		13					
44	SS-13	18	24	24	143.0		

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PHOTO VAC 2020 PID. EQUIPPED WITH 10.6 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

===== CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

===== CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	98002.15	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	6/24/98 / 6/25/98			WELL NO.	M&A-125
SITE FILE NO.	0311860011	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
QUADRANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER	PG. 3 OF 3
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	GGL	CHECKED BY	ACF	DATE	9/22/98

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
44		20				HORIZONTAL FRACTURING NO ODOR	(LACUSTRINE) DAMP, HARD, GRAY SILT, SOME VERY FINE SAND, LITTLE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND, TRACE CLAY.
45		20					
		16					
		19					
46	SS-14	24	22	92.7		HORIZONTAL FRACTURING NO ODOR	(TILL) DRY, HARD, GRAY VERY FINE SAND, SOME SILT, LITTLE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND, TRACE CLAY.
		33					
		31					
47		22					
		25				HORIZONTAL FRACTURING NO ODOR	(TILL) SIMILAR TO SS-14 BOTTOM.
48	SS-15	24	24	69.6			
		52					
		54					
49							BOTTOM OF BORING AT 49 FEET. WELL INSTALLED AT 49 FEET.
NOTES							1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT. 2. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCEMENT.

1 BLOW PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PHOTO

VAC 2020 PID. EQUIPPED WITH 10.6 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

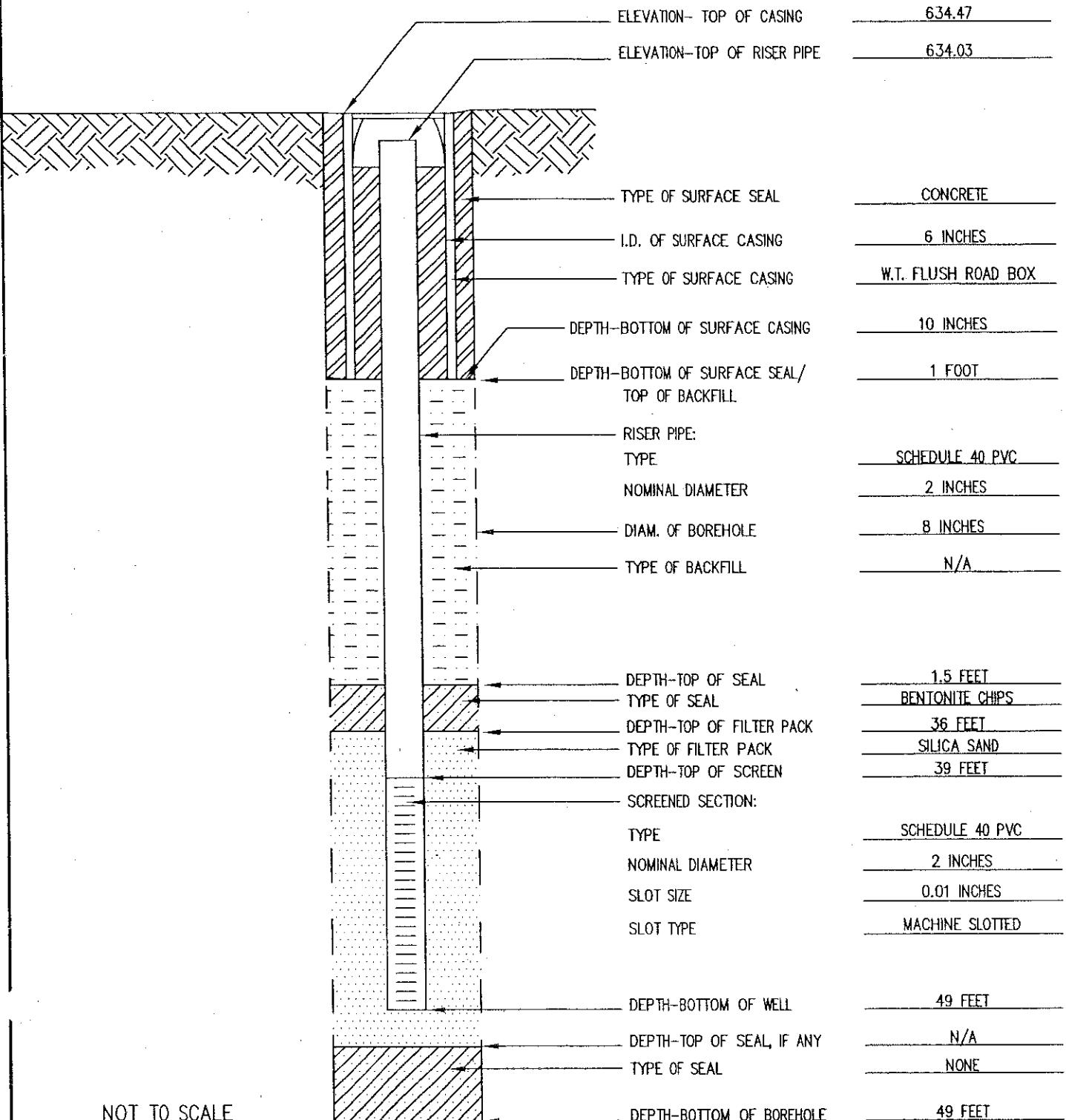
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## MONITORING WELL INSTALLATION DIAGRAM

M&A-125

PROJECT/CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 98002.15  
 LOCATION 1975 NORTH RUBY STREET, MELROSE PARK II  
 CONTRACTOR D&G DRILLING, INC. DRILLER DENNIS  
 LOGGED BY GGL DATE 6/25/98  
 CHECKED BY ACF DATE 9/22/98

LOCATION SEE SITE PLAN



NOT TO SCALE

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	98002.15	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	6/22/98 / 6/23/98			WELL NO.	M&A-126
SITE FILE NO.	0311860011	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
QU. ANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER	
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	GGL	CHECKED BY	ACF	DATE	9/22/98

PG. 1 OF 3

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
1		20					CONCRETE
2	SS-1	13	24	10	29.2		(FILL) DRY, MEDIUM DENSE, BLACK CINDER/ASH, LITTLE FINE TO MEDIUM SAND, TRACE SILT.
3		8					
4	SS-2	5	24	18	35.2	HORIZONTAL AND DIAGONAL FRACTURING TAN MOTTLING	(FILL) DAMP, STIFF, GRAY SILT, LITTLE CLAY, TRACE FINE GRAVEL.
5		3					
6	SS-3	2	24	16	38.9	TAN MOTTLING PETROLEUM ODOR 6.5'-7.5' GRAY/BLACK	(LACUSTRINE) MOIST/WET, FIRM, GRAY SILT AND CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
7		2					
8	SS-4	6	24	20	38.9	EARTHY ODOR GRADES DOWNWARD TO GRAY	(LACUSTRINE) DAMP, VERY STIFF, BROWN SILT, LITTLE CLAY, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL.
9		10					
10	SS-5	7	24	22	31.5	EARTHY ODOR	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, SOME CLAY, LITTLE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL.
11		8					
12	SS-6	4	24	20	25.8	EARTHY ODOR	(LACUSTRINE) DAMP, STIFF, GRAY SILT, SOME CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
13		6					
14	SS-7	5	24	24	33.7	WOR=WEIGHT OF ROD NO ODOR	(LACUSTRINE) MOIST, STIFF, GRAY SILT AND CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.

1" = 3 PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PHOTO VAC 2020 PID. EQUIPPED WITH 10.6 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED,%

DEPTH=DEPTH BELOW GROUND SURFACE (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

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Environmental Consultants & Engineers

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	98002.15	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	6/22/98 / 6/23/98	WELL NO.	M&A-126	PG. 2 OF 3	
SITE FILE NO.	0311860011	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
QUADRANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER	
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	GGL	CHECKED BY	ACF	DATE 9/22/98	

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
15		6					
		6					
		9					
16	SS-8	9	24	22	22.4	NO ODOR	(LACUSTRINE) MOIST, VERY STIFF, GRAY SILT, SOME CLAY, LITTLE FINE GRAVEL, TRACE COARSE SAND.
		10					
17		12					
		3					
18	SS-9	4	24	22	36.4	NO ODOR BROWN MOTTLING	(LACUSTRINE) DAMP, STIFF, GRAY SILT, SOME CLAY, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL
		6					
19		9					(LACUSTRINE) DAMP, STIFF, GRAY/BROWN SILT, SOME CLAY, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL
		2					
20	SS-10	5	24	24	341.0	NO ODOR	(LACUSTRINE) DAMP, HARD, DARK GRAY SILT, LITTLE CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL
		12					
21		24				HORIZONTAL CLEAVAGE	(LACUSTRINE) DRY/DAMP, HARD, GRAY VERY FINE SAND, LITTLE SILT.
		13					
22	SS-11	23	24	24	266.0	NO ODOR	(LACUSTRINE) DRY/DAMP, HARD, DARK GRAY VERY FINE SAND, SOME SILT, TRACE COARSE SAND.
		30					
23		34					
		24					
24	SS-12	34	24	24	120.0	NO ODOR	(LACUSTRINE) SIMILAR TO SS-11.
		59					
25		26					
		18					
26	SS-13	21	24	22	340.0	HORIZONTAL AND VERTICAL FRACTURE NO ODOR	(LACUSTRINE) DAMP, HARD, DARK GRAY SILT, SOME VERY FINE SAND, TRACE CLAY, TRACE COARSE SAND.
		18					
27		15					
		17					
28	SS-14	15	24	18	158.0	NO ODOR	(LACUSTRINE) WET, DENSE, GRAY FINE SAND, TRACE SILT, TRACE COARSE SAND.

E = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.  
 SPLIT SPOON SAMPLER  
 PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC=RECOVERY LENGTH OF SAMPLE  
 SS=SPLIT SPOON SAMPLE  
 S=SAMPLE TAKEN OFF AUGER  
 HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PHOTO  
 VAC. 2020 PIN EQUIPPED WITH 10.6 AMP

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED,%  
 DEPTH=DEPTH BELOW GROUND SURFACE  
 (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)  
 ≡ WATER TABLE (APPROX)  
 — CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)  
 — CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)



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Environmental Consultants & Engineers

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	98002.15	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	6/22/98 / 6/23/98			WELL NO.	M&A-126
SITE FILE NO.	0311860011	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
Q. RANGE	RIVER FOREST, IL	SECTION	33.2b	T. 40N	R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	GGL	CHECKED BY	ACF	DATE	9/22/98

PG. 3 OF 3

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
29		19					
		17					(LACUSTRINE) DAMP, HARD, GRAY SILT, SOME FINE SAND, LITTLE CLAY, LITTLE FINE GRAVEL.
		10					
30	SS-15	14	24	24	95.5	NO ODOR	(LACUSTRINE) DAMP, VERY STIFF, DARK GRAY SILT, SOME VERY FINE SAND, TRACE CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
		17					
31		22					
		-				1/4" CLAY LAYER AT 31.6"	
32	SS-16	6	24	20	83.2	NO ODOR	(OUTWASH) WET, MEDIUM DENSE, GRAY WHITE/BLACK MEDIUM SAND, TRACE SILT, TRACE FINE TO MEDIUM GRAVEL.
		9					
33		14					
		8					
34	SS-17	15	24	20	44.9	NO ODOR	(OUTWASH) SIMILAR TO SS-16.
		17					
35		19					(LACUSTRINE) DAMP, HARD, GRAY SILT, SOME CLAY, LITTLE VERY FINE SAND.
		11					(OUTWASH) SIMILAR TO SS-16.
36	SS-18	13	24	22	54.4	NO ODOR	(TILL) MOIST, HARD, GRAY SILT, SOME CLAY, LITTLE FINE SAND, LITTLE FINE TO MEDIUM GRAVEL. TRACE COARSE SAND.
		24					
37		25					
							BOTTOM OF BORING AT 37 FEET. WELL INSTALLED AT 35 FEET.
						NOTES	1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT. 2. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCEMENT.

FT. = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PID, EQUIPPED WITH 10.2 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

DEPTH=DEPTH BELOW GROUND SURFACE (GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

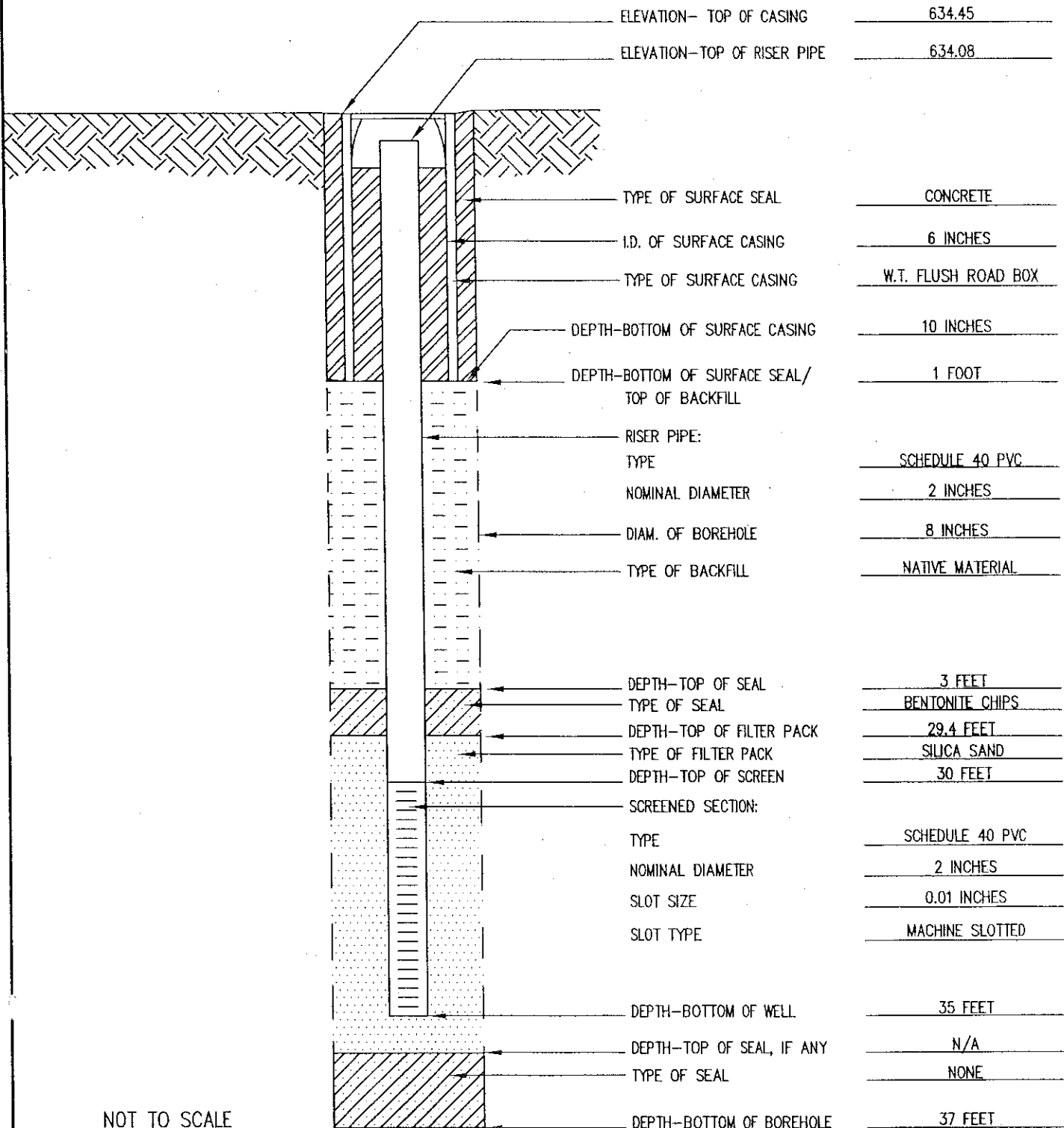
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## MONITORING WELL INSTALLATION DIAGRAM

M&A-126

PROJECT/CLIENT LINDBERG HEAT TREATING COMPANY PROJ. NO. 98002.15  
LOCATION 1975 NORTH RUBY STREET, MELROSE PARK II.  
CONTRACTOR D&G DRILLING, INC. DRILLER DENNIS  
LOGGED BY GGL DATE 6/22/98  
CHECKED BY ACF DATE 9/22/98

LOCATION SEE SITE PLAN



NOT TO SCALE

# Mabbett & Associates, Inc.

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	98002.15	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	6/25/98 / 6/26/98	WELL NO.	M&A-127	PG. 1 OF 3	
SITE FILE NO.	0311860011	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
Q. RANGE	RIVER FOREST, IL	SECTION	33.2b	T. 40N	R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	GGL	CHECKED BY	ACF	DATE	9/22/98

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
1		3					CONCRETE
2	SS-1	4	24	18	48.5	NO ODOR	(FILL) DAMP, LOOSE, BROWN MEDIUM SAND, LITTLE SILT, LITTLE FINE SAND, TRACE COARSE SAND, TRACE FINE GRAVEL.
3		7					(FILL) DAMP, MEDIUM DENSE, BLACK FINE TO MEDIUM SAND, SOME SILT, TRACE COARSE SAND, TRACE GRAVEL.
4	SS-2	2	24	16	115.0	SLIGHT PETROLEUM ODOR DIAGONAL FRACTURING	(FILL) MOIST/DAMP, FIRM, GRAY SILT AND CLAY, LITTLE FINE TO MEDIUM GRAVEL, TRACE COARSE SAND.
5		3					
6	SS-3	4	24	20	259.0	SLIGHT PETROLEUM ODOR	(FILL) SIMILAR TO SS-2.
7		1					(LACUSTRINE) WET, SOFT, GRAY CLAY, SOME SILT, TRACE FINE GRAVEL.
8	SS-4	1	24	16	278.0	NO ODOR	(LACUSTRINE) MOIST, SOFT, TAN CLAY, SOME SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.
9		3					
10	SS-5	5	24	20	217.0	NO ODOR	(LACUSTRINE) MOIST, STIFF, OLIVE SILT, SOME CLAY, TRACE COARSE SAND, TRACE FINE GRAVEL.
11		7					
12	SS-6	10	24	18	90.5	NO ODOR	(LACUSTRINE) DAMP/MOIST, STIFF, GRAY CLAY, LITTLE SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.
13		2					
14	SS-7	2	24	24	86.7	CLAY ODOR	(LACUSTRINE) MOIST, STIFF, GRAY/OLIVE CLAY, LITTLE SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PHOTO VAC 2020 PID, EQUIPPED WITH 10.6 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED,%

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

— CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

— CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	98002.15	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	6/25/98 / 6/26/98			WELL NO.	M&A-127
SITE FILE NO.	0311860011	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
QUADRANGLE	RIVER FOREST, IL	SECTION	33.2b	T. 40N	R. 12E	DRILLING EQUIPMENT	4 1/4" ID HOLLOW STEM AUGER
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	GGL	CHECKED BY	ACF	DATE	9/22/98

PG. 2 OF 3

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
15		5					
		8					
16	SS-8	3	24	22	137.0	CLAY ODOR	(LACUSTRINE) MOIST, STIFF, GRAY CLAY, LITTLE SILT, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL.
		3					
17		10					
		3					
18	SS-9	4	24	24	49.0		(LACUSTRINE) DAMP/MOIST, STIFF, GRAY CLAY, LITTLE SILT, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL.
		7					
19		7					
		2					
20	SS-10	3	24	22	52.8	NO ODOR	(LACUSTRINE) DAMP/DRY, STIFF, GRAY SILT, SOME CLAY, LITTLE FINE TO MEDIUM GRAVEL, TRACE FINE SAND, TRACE COARSE SAND.
		10					
21		25				HORIZONTAL CLEAVAGE	(LACUSTRINE) DAMP/DRY, DENSE, GRAY FINE SAND, SOME SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.
		10					
22	SS-11	11	24	18	32.2		(LACUSTRINE) DAMP, HARD, GRAY SILT, LITTLE VERY FINE SAND, LITTLE CLAY, LITTLE FINE GRAVEL, TRACE COARSE SAND.
		18					
23		21					
		10					
24	SS-12	12	24	22	106.0		(LACUSTRINE) DAMP, VERY STIFF, VERY FINE GRAY SAND AND SILT, TRACE COARSE SAND.
		15					
25		12					(LACUSTRINE) MOIST/WET, MEDIUM DENSE, GRAY FINE SAND, TRACE SILT.
		5					
26	SS-13	10	24	22	107.0	3" WET GRAY/BLACK FINE MEDIUM SAND 25.75-26'	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, SOME VERY FINE SAND, TRACE COARSE SAND, TRACE FINE GRAVEL.
		11					
27		12				NO ODOR	
		10				SLIGHT	
28	SS-14	13	24	22	29.8	DIAGONAL FRACTURING	(LACUSTRINE) DAMP, VERY STIFF, GRAY SILT, SOME VERY FINE SAND, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL.

S PER 6" =140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.

SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PHOTO

VAC. 2020 PIN EQUIPPED WITH 10.6" AV LAMP

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED,%

DEPTH=DEPTH BELOW GROUND SURFACE

(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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PROJECT/CLIENT	LINDBERG HEAT TREATING COMPANY	LOCATION	MELROSE PARK, IL	PROJ. NO.	98002.15	BORING NO.	
BORING LOCATION	SEE SITE PLAN	DATE START/FINISH	6/25/98 / 6/26/98	WELL NO.	M&A-127	PG. 3 OF 3	
SITE FILE NO.	0311860011	COUNTY	COOK	FEDERAL ID. NO.	IDL005071808		
QUAD	RANGE RIVER FOREST, IL	SECTION	33.2b	T.	40N	R.	12E
GROUND ELEVATION (NGVD)		CONTRACTOR	D&G DRILLING, INC.	FOREMAN	DENNIS		
GROUNDWATER EL./DEPTH		LOGGED BY	GGL	CHECKED BY	ACF	DATE	9/22/98

SAMPLE						REMARKS	SOIL AND ROCK DESCRIPTIONS
DEPTH FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	HEADSPACE PPM		
29	SS-15	13					
		22					
		10					
30		12	24	22	8.6	NO ODOR DIAGONAL FRACTURING	(LACUSTRINE) SIMILAR TO SS-14.
	SS-16	21					
		28					
31		15					
		29	24	22	86.4	HORIZONTAL CLEAVAGE/ FRACTURING NO ODOR	(LACUSTRINE) DRY, VERY DENSE, GRAY VERY FINE SAND, SOME SILT, TRACE COARSE SAND, TRACE FINE GRAVEL.
32	SS-17	38					
		37				DRILLER ERROR NO SAMPLE 33 TO 34'	(LACUSTRINE) DRY/DAMP, STIFF, GRAY SILT, SOME FINE SAND, TRACE COARSE SAND.
33		8					
34		12	24	24	37.2	NO ODOR	(TILL) DRY/DAMP, VERY STIFF, GRAY SILT, LITTLE FINE SAND, LITTLE CLAY, TRACE COARSE SAND, TRACE FINE TO MEDIUM GRAVEL.
35		15					
36		21					
BOTTOM OF BORING AT 36 FEET. WELL INSTALLED AT 30 FEET.							NOTES 1. CONCRETE DRILLED WITH SOLID STEM AUGER FINGER BIT. 2. AUTOMATIC HYDRAULIC HAMMER UTILIZED FOR SPLIT SPOON ADVANCEMENT.

BLOWS PER 6" = 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN=PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC=RECOVERY LENGTH OF SAMPLE

SS=SPLIT SPOON SAMPLE

S=SAMPLE TAKEN OFF AUGER

HEADSPACE=RESULT OF FIELD HEADSPACE SCREENING WITH PHOTO VAC 2020 PID. EQUIPPED WITH 10.6 eV LAMP.

RQD=LENGTH OF SOUND CORES >4 IN./LENGTH CORED,%

DEPTH=DEPTH BELOW GROUND SURFACE  
(GRAPHICAL COLUMN SHOWS LOCATION OF SAMPLE)

≡ WATER TABLE (APPROX)

===== CHANGE IN MATERIAL TYPE (DASHED WHERE INFERRED)

===== CHANGE IN DEPOSIT TYPE (DASHED WHERE INFERRED)

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

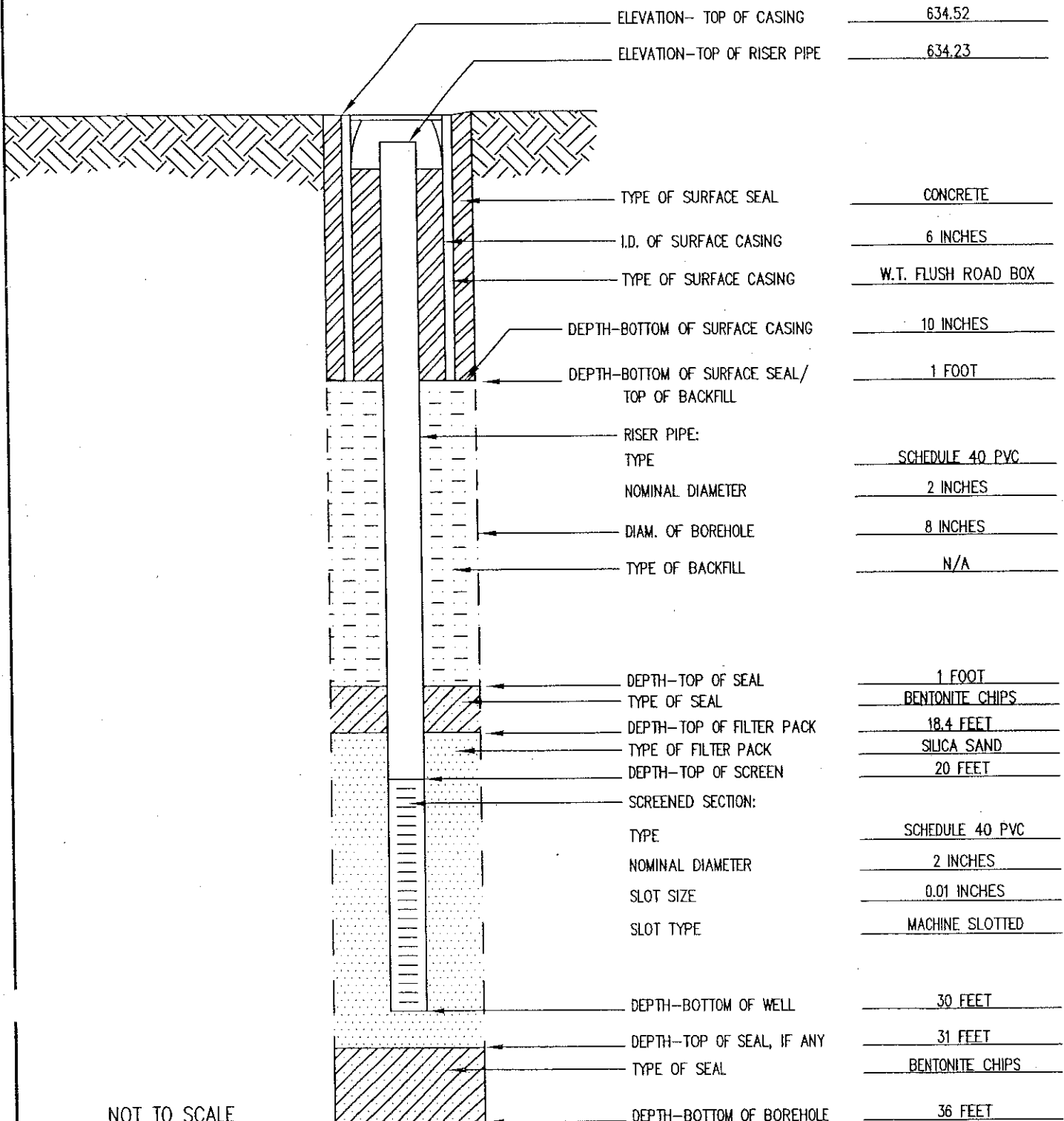
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## MONITORING WELL INSTALLATION DIAGRAM

M&A-127

PROJECT/CLIENT LUNDBERG HEAT TREATING COMPANY PROJ. NO. 98002.15  
LOCATION 1975 NORTH RUBY STREET, MELROSE PARK IL.  
CONTRACTOR D&G DRILLING, INC. DRILLER DENNIS  
LOGGED BY GGL DATE 6/26/98  
CHECKED BY ACF DATE 9/22/98

LOCATION SEE SITE PLAN



NOT TO SCALE

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

Five Alfred Circle, Bedford, Massachusetts 01730 • (617) 275-6050 • Fax: (617) 275-5651

PROJECT/CLIENT LINDBERG HEAT TREATING CO. LOCATION MELROSE, IL. PROJ. NO. 87024.07  
 BORING LOCATION SEE SITE PLAN DATE START/FINISH 02/22/92 / 02/22/92  
 GROUND ELEVATION (NGVD) \_\_\_\_\_ DRILLED BY FOX DRILLING  
 GROUNDWATER DEPTH 29.5 FT. LOGGED BY GLO DATE 02/22/92

MW-10

PG. 1 OF 2

EL.	DEPTH	SAMPLE				HEADSPACE	SOIL AND ROCK DESCRIPTIONS
FT.	FT.	TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.	RESULTS	
2							
4		SS-1	9 14 15 16	24	15	0.2ppm	CLAY - MEDIUM PLASTICITY, TRACE TO FINE MEDIUM SAND, BROWN.
6							
8							
10		SS-2	5 9 14 6	24	20	ND	CLAY - MOD. PLASTIC, TRACE MED-COARSE SAND AND FINE GRAVEL, LIGHT GRAY.
12							
14		SS-3	3 5 11 14	24	24	0.1ppm	CLAY - MOD PLASTIC, GRAY.
16							
18							
20		SS-4	39 50/5"	11	10	ND	CLAY - TOP 4" OF SAMPLE - LOW MOD. PLASTIC CLAY WITH LITTLE SAND. MIDDLE 3" OF SAMPLE - FINE SAND AND SILT, BOTTOM 3" OF SAMPLE - LOW PLASTIC CLAY AND FINE SAND, GRAY.
22							
24		SS-5	50	6	5	0.15ppm	SILTY SAND & CLAY - SIMILAR TO BOTTOM OF SS-4
26							

BLOWS PER 6" - 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D. SPLIT SPOON SAMPLER

PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC-RECOVERY LENGTH OF SAMPLE

SS-SPLIT SPOON SAMPLE

GC-FIELD GAS CHROMATOGRAPH

HNu-FIELD HEADSPACE READING, CORRECTED FOR BACKGROUND

RG-BACKGROUND

ROD-LENGTH OF SOUND CORES >4 IN./LENGTH CORED, %

U-UNDISTURBED SAMPLES

≡

GROUNDWATER

INTERFACE

APPROXIMATE INTERFACE

# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

Five Alfred Circle, Bedford, Massachusetts 01730 • (617) 275-6050 • Fax: (617) 275-5651

PROJECT/CLIENT LINDBERG HEAT TREATING CO. LOCATION MELROSE, IL. PROJ. NO. 87024.07  
 BORING LOCATION SEE SITE PLAN DATE START/FINISH 02/22/92 / 02/22/92  
 GROUND ELEVATION (NGVD) \_\_\_\_\_ DRILLED BY FOX DRILLING  
 GROUNDWATER DEPTH 29.5 FT. LOGGED BY GLO DATE 02/22/92

MW-10

PG. 2 OF 2

EL FT.	DEPTH FT.	SAMPLE				HEADSPACE RESULTS	SOIL AND ROCK DESCRIPTIONS
		TYPE and NO.	BLOWS PER 6 IN.	PEN IN.	REC IN.		
28							
30		SS-6	13 19 23 30	24	20	ND	SAND - WIDELY GRADED, SOME FINE GRAVEL, LITTLE SILT, GRAY.
32							
34		SS-7	18 23 30 40	24	18	ND	SAND - SIMILAR TO SS-6 CLAY - SIMILAR TO SS-3
36		SHELBY TUBE	PUSH	12+	12+		
							BOTTOM OF BORING - 37' WELL INSTALLED @ 34'

BLOWS PER 6" - 140 LB. HAMMER FALLING 30" TO DRIVE A 2.0 IN. O.D.  
SPLIT SPOON SAMPLER

PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC - RECOVERY LENGTH OF SAMPLE

SS - SPLIT SPOON SAMPLE

ROD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED, %

U - UNDISTURBED SAMPLES

☒ GROUNDWATER

—— INTERFACE

- - - - APPROXIMATE INTERFACE



# Mabbett & Associates, Inc.

Environmental Consultants & Engineers

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## MONITORING WELL INSTALLATION REPORT

MW-10

PROJECT/CLIENT LINDBERG HEAT TREATING CO.

PROJ. NO. 87024.07

LOCATION MELROSE PARK, IL.

PG. 1 OF 1

CONTRACTOR FOX DRILLING

DRILLER GARY

BORING NO. MW-10

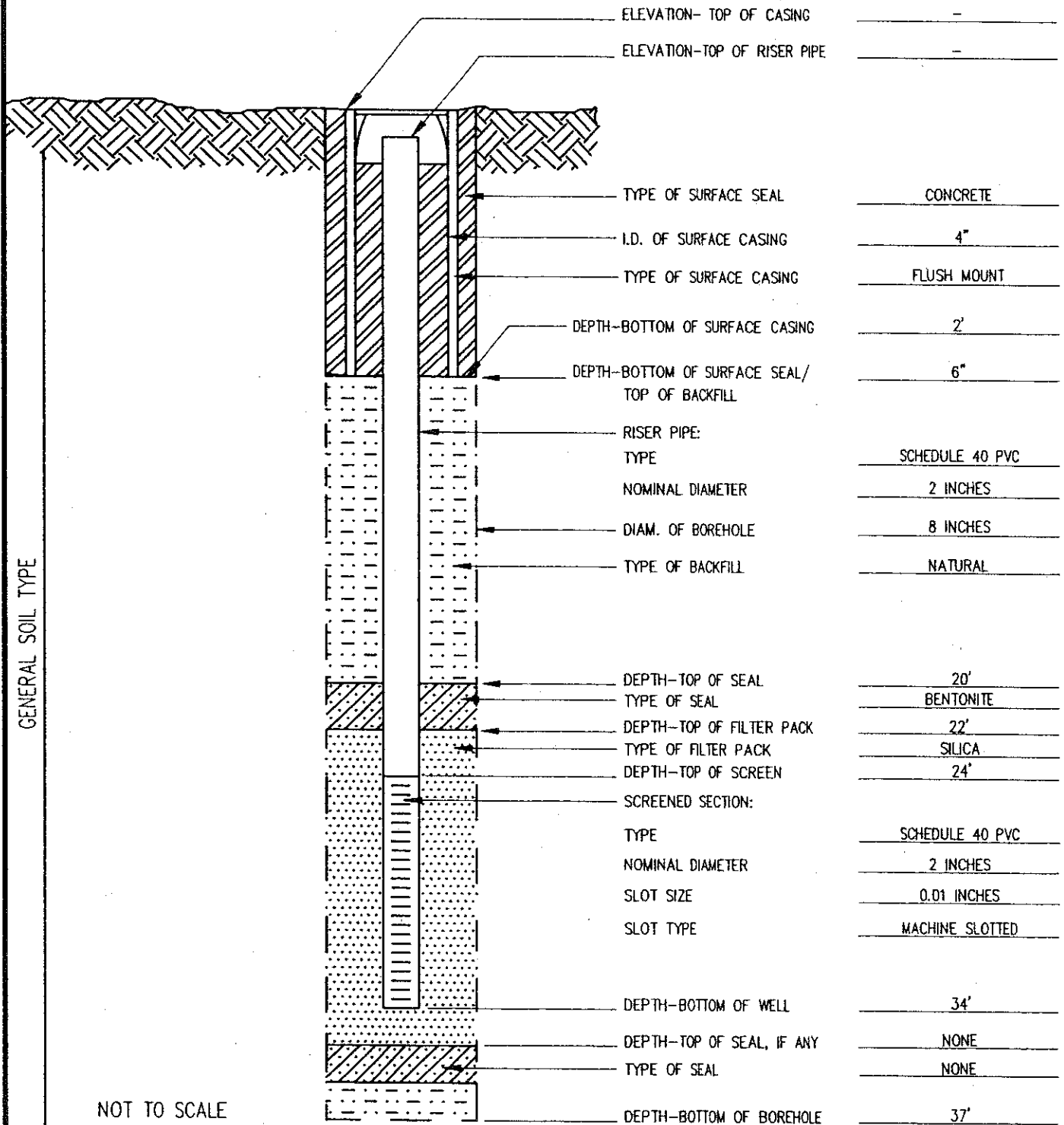
LOGGED BY GLO

DATE 2/21/92

LOCATION SEE SITE PLAN

CHECKED BY \_\_\_\_\_

DATE \_\_\_\_\_



**APPENDIX B**  
**EPA INSPECTION DOCUMENTATION**



United States Environmental Protection Agency  
Washington, D.C. 20460

Toxic Substances Control Act

NOTICE OF INSPECTION

Form Approved  
OMB No. 2070-0007  
Approval Expires 07-31-96

The public reporting burden for this collection of information is estimated to average 5 minutes per response. This estimate includes time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information to the Chief, Information Policy Branch (PM-223), US Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503, marked ATTENTION: Desk Officer for EPA.

1. Investigation Identification			2. Time	3. Firm Name
Date 11-30-05	Inspector No. IL019	Daily Seq. No. 001	11:07	Bodycote Thermal Processing
4. Inspector Address 9511 W. Harrison St. Des Plaines IL 60016-1563				5. Firm Address 1975 N Ruby St Melrose Park, IL 60160

REASON FOR INSPECTION

Under the authority of Section 11 of the Toxic Substances Control Act:

☒ For the purpose of inspecting (including taking samples, photographs, statements, and other inspection activities) an establishment, facility, or other premises in which chemical substances or mixtures or articles containing same are manufactured, processed or stored, or held before or after their distribution in commerce (including records, files, papers, processes, controls, and facilities) and any conveyance being used to transport chemical substances, mixtures, or articles containing same in connection with their distribution in commerce (including records, files, papers, processes, controls, and facilities) bearing on whether the requirements of the Act applicable to the chemical substances, mixtures, or articles within or associated with such premises or conveyance have been complied with.

☐ In addition, this inspection extends to (Check appropriate blocks):

☐ A. Financial data

☐ D. Personnel data

☐ B. Sales data

☐ E. Research data

☐ C. Pricing data

The nature and extent of inspection of such data specified in A through E above is as follows:

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Inspector Signature <i>Jim Clark</i>		Recipient Signature <i>Chuck Kenney</i>	
Name Jim Clark		Name CHUCK KENNEY	
Title EPA III	Date Signed 11-30-05	Title PLANT ENGINEER	Date Signed 11-30-05



United States Environmental Protection Agency  
Washington, D.C. 20460

Toxic Substances Control Act

TSCA INSPECTION CONFIDENTIALITY NOTICE

Form Approved  
OMB No. 2070-0007  
Approval Expires 10-31-92

The public reporting burden for this collection of information is estimated to average 5 minutes per response. This estimate includes time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information to the Chief, Information Policy Branch (PM-223), US Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503, marked ATTENTION: Desk Officer for EPA.

1. Investigation Identification			2. Firm Name
Date 11-30-05	Inspector No. IL 419	Daily Seq. No. 001	Bodycote Thermal Processing
3. Inspector Name Jim Clark			4. Firm Address 1975 N. Ruby St Metrose Park IL 60160
5. Inspector Address 9511 W. Harrison St. Des Plaines IL 60014			6. Chief Executive Officer Name TIM VEENBAS
			7. Title DIVISION MANAGER

TO ASSERT A CONFIDENTIAL BUSINESS INFORMATION CLAIM

It is possible that EPA will receive public requests for release of the information obtained during inspection of the facility above. Such requests will be handled by EPA in accordance with provisions of the Freedom of Information Act (FOIA), 5 USC 552; EPA regulations issued thereunder, 40 CFR Part 2; and the Toxic Substances Control Act (TSCA), Section 14. EPA is required to make inspection data available in response to FOIA requests unless the Administrator of the Agency determines that the data contain information entitled to confidential treatment or may be withheld from release under other exceptions of FOIA.

Any or all the information collected by EPA during the inspection may be claimed confidential if it relates to trade secrets or commercial or financial matters that you consider to be confidential business information. If you assert a CBI claim, EPA will disclose the information only to the extent, and by means of the procedures set forth in the regulations (cited above) governing EPA's treatment of confidential business information. Among other things, the regulations require that EPA notify you in advance of publicly disclosing any information you have claimed as confidential business information.

A confidential business information (CBI) claim may be asserted at any time. You may assert a CBI claim prior to, during, or after the information is collected. The declaration form was developed by the Agency to assist you in asserting a CBI claim. If it is more convenient for you to assert a CBI claim on your own stationery or by marking the individual documents or samples "TSCA confidential business information," it is not necessary for you to use this form. The inspector will be glad to answer any questions you may have regarding the Agency's CBI procedures.

While you may claim any collected information or sample as confidential business information, such claims are unlikely to be upheld if they are challenged unless the information meets the following criteria:

1. Your company has taken measures to protect the confidentiality of the information, and it intends to continue to take such measures.

2. The information is not, and has not been, reasonably obtainable without your company's consent by other persons (other than governmental bodies) by use of legitimate means (other than discovery based on showing of special need in a judicial or quasi-judicial proceeding).
3. The information is not publicly available elsewhere.
4. Disclosure of the information would cause substantial harm to your company's competitive position.

At the completion of the inspection, you will be given a receipt for all documents, samples, and other materials collected. At that time, you may make claims that some or all of the information is confidential business information.

If you are not authorized by your company to assert a CBI claim, this notice will be sent by certified mail, along with the receipt for documents, samples, and other materials to the Chief Executive Officer of your firm within 2 days of this date. The Chief Executive Officer must return a statement specifying any information which should receive confidential treatment.

The statement from the Chief Executive Officer should be addressed to:

Emma Averb DCO  
USEPA Region IV SP-14T  
77 W. Jackson St  
Chicago IL 60604

and mailed by registered, return-receipt requested mail within 7 calendar days of receipt of the Notice. Claims may be made any time after the inspection, but inspection data will not be entered into the special security system for TSCA confidential business information until an official confidentiality claim is made. The data will be handled under the agency's routine security system unless and until a claim is made.

TO BE COMPLETED BY FACILITY OFFICIAL RECEIVING THIS NOTICE:

I have received and read the notice.

If there is no one on the premises of the facility who is authorized to make business confidentiality claims for the firm, a copy of this Notice and other inspection materials will be sent to the company's chief executive officer. If there is another company official who should also receive this information, please designate below.

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Signature Chuck Kenny	Name
Title Plant Engineer	Title
Date Signed 11-30-05	Address



**APPENDIX C**  
**WRITTEN CERTIFICATION**



September 12, 2006

5 Alfred Circle  
Bedford, Massachusetts  
01730-2348  
Tel: (781) 275-6050  
Fax: (781) 275-6651  
info@mabbett.com  
www.mabbett.com

Mr. Tony Martig  
Regional PCB Coordinator  
US EPA Region V  
77 W. Jackson Blvd.  
Chicago, IL 60604

Re: PCB Certification  
Bodycote Thermal Processing  
1975 N Ruby Street  
Melrose Park, IL 60160  
Project No. 1998002.200

Dear Mr. Martig:

This written certification serves to notify the EPA about the subject site in question. The property is located at 1975 N Ruby Street, Melrose Park, Illinois 60160. Mabbett & Associates, Inc. (M&A) of 5 Alfred Circle, Bedford, Massachusetts is the Environmental Consultant in charge of remediation efforts. Please be advised that all sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination at the cleanup site, are on file at the location designated in this certificate, and are available for EPA inspection. A PCB Action/Work Plan prepared by M&A and dated September 12, 2006 is also on file at the Site. If you have any question please feel free to contact either Paul Steinberg at M&A, or Brian Strebing at Bodycote Thermal Processing.

Very truly yours,

MABBETT & ASSOCIATES, INC.

Paul D. Steinberg  
Vice President  
(781) 275-6050 x 306

BODYCOTE THERMAL PROCESSING

Brian A. Strebing  
Manager of Engineering and Equipment  
(708) 236-5352

cc: (MF/RF)